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28 June 1978

U S S R

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No. 91

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28 June 1978

USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS  
BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 91

This serial publication contains abstracts of articles and news items from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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BIOMEDICAL SCIENCES  
Aerospace Medicine

USSR

UDC 591.488.4-08:572.02

STRUCTURAL AND FUNCTIONAL ASPECTS OF THE VESTIBULAR APPARATUS OF RATS  
SUBJECTED TO WEIGHTLESSNESS FOR 19.5 DAYS IN "KOSMOS-782"

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 1, 1978  
pp 22-28 manuscript received 20 Jun 77

VINNIKOV, YA. A., GAZENKO, O. G., TITOVA, L. K., BRONSHTEYN, A. A., (Deceased),  
GOVARDOVSKIY, V. I., PEVZNER, R. A., GRIBAKIN, F. G., ARONOVA, M. Z.,  
KHARKEYEVICH, T. A., TSIRULIS, T. P., PYATKINA, G. A., LYCHAKOV, D. V.,  
PAL'MBAKH, L. R. and ANICHIN, V. F., Laboratory of Evolutionary Morphology,  
Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov,  
Academy of Sciences USSR, Leningrad

[Abstract] Histologic slides and electron micrographs of the vestibular  
apparati obtained from 12 rats subjected to a 19.5 day period of weightless  
aboard the sputnik Kosmos-782 were evaluated for comparison with the mor-  
phology of control rats. Particular stress conditions consisted of accelera-  
tion during launching and landing. Remarkable changes included adherence  
of otoliths to the utricular receptor surface, peripheral displacement of  
the nucleoli within the nuclei of the receptor cells, and apparent destruc-  
tion of some receptor cells due to edema. Horizontal canal cristae showed  
separation from the cupula, the shape of the otoliths was altered, and the  
structure of the otoconia was changed presumably due to alterations in the  
calcium component. Figures 6; references 10: 6 Russian, 4 Western.

Biochemistry

USSR

UDC 616.155.392-036.11

CONTROL FOR A STUDY OF RNA SYNTHESIS IN BONE MARROW CELLS DURING ACUTE LEUKEMIA

Ashkhabad ZRDAVOOKHRANENIYE TURKMENISTANA in Russian No 7, Jul 77 pp 34-36

KHUDAYBERGENOV, M. A., Department of Faculty Therapy, First Leningrad Order of Labor's Red Banner Medical Institute; Department of Propadeutic Therapy, Turkmen State Medical Institute

[Abstract] What control to select in a study of RNA synthesis in blood cells and bone-marrow cells poses a problem because of cell population changes in acute leukemia. A review of the literature is presented to support the conclusion that selection of a control--in study of RNA synthesis during acute leukemia--should give preference to the indices of RNA synthesis in blood and bone marrow cells of healthy people. Synthesis is measured by short-term cultivation with isotope labelling of an RNA precursor and subsequent autoradiography. The author also cites his own research in this area; he has studied 11 healthy children aged 2 to 12 and has found a non-homogeneity of blast populations in the healthy marrow--as the diameter of blasts decreases, the number of bone marrow blasts capable of RNA synthesis also decreases. There is a relation between cell diameter and production of RNA.

USSR

UDC 616-006-092:577.153.9

TISSUE CULTURE CHOLINESTERASE ACTIVITY

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 1, 1978 pp 93-98 manuscript received 11 Jan 77

CHUDINOVSKAYA, N. V., Laboratory of Histopathology of the Central Nervous System, Institute of Human Morphology, Academy of Medical Sciences USSR, Moscow

[Abstract] In order to obtain reliable markers for various types of tissue cultures, histochemical studies were conducted to determine cholinesterase activities of several cell lines. The results showed that of the cell lines tested--RH (human kidney), HeLa, Chinese hamster fibroblast, and murine ependymoblastoma (ME)--only ME possessed such activity. Furthermore, butyrylcholinesterase activity exceeded that of acetyl cholinesterase during the period of observation (1-5 days; enzyme activities were lowest during the first 2 days of culture when the mitotic index was highest. Enzyme activities increased markedly during the 3d day when the cells entered a stationary growth phase with active monolayer formation. Figures 3; references 19: 6 Russian, 13 Western.

USSR

UDC 615.334. (Tetracyclinum):615.453.4.033

EFFECT OF AUXILIARY SUBSTANCES ON THE BIOAVAILABILITY OF TETRACYCLINE HYDROCHLORIDE CAPSULES (IN VITRO STUDY)

Moscow ANTIBIOTIKI in Russian No 3, 1978 submitted 5 May 77, signed to press 15 Feb 78 pp 215-219 manuscript received 5 May 77

GRAKOVSKAYA, L. K., NESTEROVA, L. YA., OKHOTNIKOVA, V. F., ZAK, A. F., YERMOLOVA, O. B. and BATUASHVILI, T. A., All-Union Research Institute of Antibiotics, Moscow

[Abstract] A study of five series of tetracycline hydrochloride powders involving determination of the fractional composition, the bulk density, specific surface and friability indicated that the degree of fineness of the powder had no significant effect on the disintegration of the capsule or on the rate of the antibiotic entering into solution. There was demonstrated an effect of the auxiliary substances in the capsules on their disintegration and the rate of tetracycline dissolution. Capsules containing tetracycline hydrochloride without additives of antibiotic entered into solution 4-6 times faster than capsules containing magnesium carbonate and calcium phosphate additives. Figures 3; references 11: 2 Russian, 9 Western.

USSR

UDC 577.154.52

IMMOBILIZATION OF PHOSPHORYLASE B AND A STUDY OF ITS ENZYMIC AND IMMUNOBIOLOGICAL PROPERTIES

Moscow BIOKHIMIYA in Russian No 3, 1978 pp 504-509 manuscript received 11 Jul 77

KOZLOVA, N. B., ROZE, L. V. and VUL'FSON, P. L., Chair of Biochemistry of Moscow State University imeni M. V. Lomonosov

[Abstract] A study of the properties of phosphorylase B immobilized on an agar derivative indicated that the enzymic activity in comparison to soluble phosphorylase B is 15-20 percent, the  $K_m$  value for glucose-1-phosphate increased 1.5 times, the pH optimum was unchanged and the thermostability of the enzyme increased significantly. Phosphorylase B, immobilized on a highly activated sorbent lost its enzymic activity completely but retained its antigenic properties, binding 1.6-2 moles of antibody (per monomer). Purified antibodies, homogeneous during electrophoresis in polyacrylamide gel, were isolated with the use of electrophoresis. The capacity of the immunosorbent was 500-800 mg of antibodies per 1 g of dry weight. The purified antibodies displayed a lesser inhibiting capacity during interaction with soluble phosphorylase. The nature of inhibition of the immobilized and the soluble phosphorylase was the same. It was assumed that there occurs, during immobilization, conformational changes only in the area of the active center of the enzyme, spatially separated from the center of the antibody binding center. Figures 7; references 17: 6 Russian, 11 Western.

USSR

UDC 616-001.17:612.115

DYNAMICS IN FIBRINOGEN B LEVELS IN THE BLOOD OF PATIENTS WITH THERMAL BURNS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 37-39

CHERNOBROVYY, N. P., doctor of medical sciences, TARAN, V. M. and TARAN, N. P., Khmel'nitskiy Oblast Hospital

[Abstract] In view of the fact that burns are known to modify the coagulating mechanism of blood, determinations were made of the dynamics of fibrinogen B in the blood of 128 patients with burns. Determination of fibrinogen B by the Cummene-Lyons reaction (interaction of fibrinogen B with beta-naphthol) revealed that the reaction was weak--indicating low levels of fibrinogen B--in the 38 patients with localized burns; on discharge from the hospital the reaction was either negative or very weakly positive. However, in the case of 63 patients with severe burns the reaction was strongly positive at the time of admission and elevated levels of fibrinogen B persisted even after discharge, reflecting greater tissue damage and more advanced disruption of the coagulating mechanism. References: 4 Russian.

USSR

UDC 576.993.192.1:577.1

FOLIC ACID BIOSYNTHESIS IN EIMERIA TENELLA (COCCIDIA)

Leningrad PARAZITOLOGIYA in Russian No 1, 1978 pp 3-8

ZAYONTS, V. I., KRYLOV, M. V., LOSKOT, V. I. and KIRILLOV, A. I., All-Union Scientific Research Veterinary Institute of Fowl Husbandry, and the Zoological Institute, Academy of Sciences USSR, Leningrad

[Abstract] Competitive inhibition studies were undertaken on 315 chicks (Starcross 288 leghorns) infected with 20,000 Eimeria tenella oocysts each to elucidate the nature of folic acid metabolism in the parasite in terms of chick survival or mortality. The results showed that E. tenella does not utilize preformed folic acid, but synthesizes its precursor, 7,8-dihydrofolate, from para-aminobenzoic acid (PABA) which enters the parasite via the host chick. Complete competitive inhibition is evident when the PABA: sulfadimezine (SD) ratio reaches 1:16.7; this indicates that within this particular host/parasite system SD is 6 times as effective as an inhibitor of PABA than it is in a bacterial culture system. An increase in the PABA:SD ratio favors E. tenella viability as indicated by the rise in chick mortality which reaches its maximum at PABA:SD = 1:1.25. References 25: 2 Russian, 23 Western.

USSR

UDC 576.893.161.22:577.1

IN-VITRO ENZYMATIC LIPOLYSIS IN THE PRESENCE OF LAMBLIA DUODENALIS

Leningrad PARAZITOLOGIYA in Russian No 1, 1978 pp 9-14

AKIMOVA, R. F., BENEDIKTOV, I. I. and SOLOV'YEV, M. M., Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR, Moscow

[Abstract] In vitro studies were conducted on tributyrin lipolysis by a commercial lipase in the presence of various numbers of *Lamblia duodenalis*. The potentiometric and colorimetric studies revealed that *L. duodenalis* inhibits lipolysis in direct proportion to the number of parasites which are present in the test tube system. This may indicate the mechanism by which *L. duodenalis* avoids destruction in the intestinal tract of hosts as well as contributes to steatorrhea commonly seen in patients infested with this parasite. Figures 1; references 15: 8 Russian, 7 Western.

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Biophysics

USSR

UDC 615.835.3.015.4:612.172

EFFECTS OF EXPERIMENTAL HYPERBARIC OXYGENATION ON THE MORPHOFUNCTIONAL ASPECTS OF NORMAL MYOCARDIUM

Moscow ARKHIV PATOLOGII in Russian No 1, 1978 pp 49-54 manuscript received 23 Feb 77

ROSSINSKAYA, V. V., SHLYAPNIKOV, V. N. and UGLOVA, M. V., Central Scientific Research Laboratory, Kuybyshev Medical Institute imeni D. I. Ul'yanov, Kuybyshev

[Abstract] Histopathologic and histochemical examinations of the myocardia of 50 sexually-mature 2-2.5 kg outbred rabbits were employed in evaluating the effects of hyperbaric oxygenation ( $pO_2$  3 atm, 45 min saturation time). The results showed that 1-3 sessions, resulted in reversible morphofunctional changes (depression of glycogen content and of succinate dehydrogenase activity, and increase in the activities of malate and lactate dehydrogenases); 4-5 sessions resulted in the beginning stages of advanced structural changes evidently reflecting oxygen toxicity (altered hemodynamics, microthrombosis, dystrophic changes, depression of glycogen and RNA levels; depression of ATPase, succinate, lactate, malate dehydrogenase activities); 6-8 sessions led to irreversible structural and histochemical alterations. The experimental data suggest that clinical use of hyperbaric oxygenation should be limited to 1-3 sessions per course of treatment, and not repeated at less than a 7 day interval. Figures 3; references 19: 9 Russian, 10 Western.

Entomology

USSR

UDC 614.449:57:576.895.773

EXPERIENCE IN USING SEVIN-CONTAINING BAIT FOR CONTROL OF CHLOROPHOS-RESISTANT HOUSE FLIES

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian  
No 6, 1977 pp 742-743 manuscript received 15 Feb 77

KULANIN, V. L., Railroad Sanitary and Epidemiologic Station No 5, Samarkand, Central Asian Railroad System

[Abstract] Tests were conducted on the efficiency of 2% sevin suspension--containing aqueous bait stations--in eliminating house flies (*Musca domestica vicina*) and several other species of flies (*Musca sorbens*, *Lucilia sericata*, *Ravinia striata*, and *Corposarcophaga haemorrhoidalis*) under conditions prevailing in the Bukhara and Samarkand oblasts. Additional stations contained attractants in the form of meat, fish, or sugar. The results showed essentially equal effectiveness of both types of bait stations with death of the flies occurring within 1-3 min of ingestion of the sevin-containing water. The number of dead flies found in and around the bait stations varied from several hundred to several thousand after 3 weeks of exposure. References 6, Russian.

USSR

UDC 576.895.775

EPIZOOTOLOGIC ROLE OF FRONTOPSYLLA HETERA (SIPHONAPTERA) FLEAS IN THE GORNO-ALTAY PLAGUE NIDUS

Leningrad PARAZITOLOGIYA in Russian No 1, 1978 pp 27-30

YAKUBA, V. N., MAYEVSKIY, M. P., LAZAREVA, L. A., KLIMOV, V. T., MASHKOVSKIY, I. K., INNOKENT'YEVA, T. I. and BONDARENKO, A. A., Irkutsk Siberian and Far Eastern Antiplague Scientific Research Institute, and the Gorno-Altay Antiplague Station

[Abstract] In view of the fact that *Frontopsylla hetera* represents one of the major flea populations in Gorno-Altay and is regularly found on the Mongolian pike, studies were undertaken to determine whether it functions as transmitter of plague to the pike and thereby serves to maintain the nidus of this infectious disease. The bacteriologic findings indicated that although *F. hetera* is regularly infected with the virulent *Y. pestis* bacillus prevalent in that area and serves as a long term carrier it rarely is responsible for clinical disease in the Mongolian pike. Furthermore, *F. hetera* can be infected with the atypical avirulent forms of *Y. pestis* prevalent in Gorno-Altay; nevertheless, in the latter case the proventriculus is never blocked and the bacillus in question cannot be detected in the flea after 1.5-2 months. References: 2 Russian.

Environmental & Ecological Problems

USSR

UDC 631.5:551.3

WIND EROSION OF SOILS IN THE MELKOSOPOCHNIK OF PAVLODARSKAYA OBLAST

Alma-Ata IZVESTIYA AKADEMII NAUK KAZAKHSKOY SSR in Russian No 6, 1977 pp 50-54

ABDYKHALYKOV, S. D., DOSMUKHAMEDOV, T. KH. and SMAGULOV, T. A.

[Abstract] Soil erosion was studied in the Kazakhskiy melkosopochnik, an area of low, rounded, isolated hills, in Pavlodarskaya Oblast. The area covered 3.6648 million hectares; 367,200 hectares of it was plowland. It lies in the subzone of moderately dry steppes. The subzone climate is severely continental. Annual air temperature shows a 37° range. Wind velocity averages 5 m/s. Soil erosion grew in intensity after the opening up of virgin and fallow lands in Bayanaul'skiy and Ekibastuzskiy rayons. Deflation showed up severely in some tracts with dark-chestnut light and carbonate soils in the form of winddrifts on the downwind side. Humus losses were greatest in the 0-5 cm and 0-10 cm layers, the top of the humus horizon. The Zhosalinskiy Sovkhoz, Bayanaul'skiy Rayon, suffered a per-hectare loss of 0.4 mm of its soil layer, or 5 tons, each year from a 67-hectare field section in 1959-1967. To block the deflation of the soil cover, particularly for soils light in mechanical composition, the full complex of soil-protective measures developed by the All-Union Institute of Grain Farming must be applied. References 8, Russian.

USSR

UDC 612.124-06:613.12(99)

EFFECTS OF ANTARCTIC ENVIRONMENT ON SERUM PROTEIN PATTERNS OF POLAR EXPLORERS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2, 1978 pp 19-26 manuscript received 28 Mar 77

TASHPULATOV, R. YU., GUSEVA, YE. V. and PETROSOV, V. V., Institute of Microbiology, Epidemiology and Immunology imeni Gamaleya, Academy of Medical Sciences USSR

[Abstract] Ouchterlony immunodiffusion techniques were employed to evaluate the effects of Antarctic environment on the serum protein patters of polar explorers participating in the 1970 (15th) and 1972-1973 (17th) Soviet expeditions stationed at the Vostok station. The studies were conducted on blood samples obtained from 11 subjects in each expedition and covered pre-expedition levels (Leningrad), a period of adaptation at Vostok station, the period of polar night, and the period of polar day. While considerable fluctuations were noted between the two expeditions, the general trends that were established consisted of the following: high pre-expedition levels of albumin, virtually no change in prealbumin fraction, a gradual increase in the albumin fraction during the course of the expeditions, depression of  $\beta$ -lipoproteins and  $\alpha_2$ -macroglobulins, depression of  $\beta_1A$ -globulin (a complement component), a marked increase in immunoglobulins--particularly IgG--which reached their highest levels during polar night, and a significant increase in transferrin concentration. References 6: 3 Russian, 3 Western.

## Epidemiology

USSR

UDC 616-078.75:616.927.575.4

### PHAGOTYPE OF PARATYPHOID B CULTURES IN THE TURKMEN SSR

Ashkhabad ZRDAVOOKHRANENIYE TURKMENISTANA in Russian No 7, Jul 77 pp 26-30

NEMTSOVA, V. K., GAL'PERIN, I. P. and VASIL'YEVA, A. V., Ashkhabad Scientific Institute of Epidemiology and Hygiene imeni S. M. Dursunova

[Abstract] This is a survey. Phagotyping of paratyphoid B cultures was begun in the USSR in 1947 by R. V. Gordina and L. Ya. Kats-Chernokhvostova. Subsequent findings for various areas of the Soviet Union are recapitulated. Phagotyping in the Turkmen SSR began in 1968 and has used cultures from various population centers from patients, carriers and environmental materials. Ten phage types were used for the typing (1,2,3a,3b,Jersey, Beccles, Taunton, Dandy, BAOR and Vorskop) acquired from the Tbilisi Scientific Research Institute of Vaccines and Sera. The Dandy phagotype was identified most often (50%), followed by 3a, 1, Taunton, BAOR and other non-typing strains (7 to 12.8%). Other phagotypes were also found in lesser numbers (0.8 to 2.3%). Variation in incidence of phagotypes was found and was a function of outbreaks of the pertinent phagotype. Hemocultures accounted for 37% of all cultures isolated, coprocultures 58%, other materials (urine, bile, wash water) 3%. Tabulation is presented of the distribution of phagotypes of paratyphoid B cultures, isolated from the various materials (blood, excreta, etc.). Phagotypes of Dandy, Taunton and BAOR predominated. References 17, Russian.

USSR

UDC 576.8.097.3:576.851.252

### SOME IMMUNOLOGICAL INDICES IN HEALTHY PEOPLE IN CONNECTION WITH CARRYING OF PATHOGENIC STAPHYLOCOCCI

Ashkhabad ZRDAVOOKHRANENIYE TURKMENISTANA in Russian No 7, Jul 77 pp 23-26

NEPESOVA, N. N. and STEPANYAN, Department of Microbiology, Turkmen State Medical Institute

[Abstract] This is an inquiry into the causes of the wide existence of carriers of pathogenic staphylococci. The level of non-specific humoral immunity (hemolytic activity, normal hemolysins and hemagglutinins) was measured in 229 workers in Ashkhabad food plants. Most of the people showed a low titer or absence of normal antibodies in the blood. A study of the seasonal variations in the immunity indices revealed lowest indices in the summer and higher in the winter. Comparison of carriers and of individuals who were not carriers revealed differences in levels of normal hemagglutinins (lower in carriers) and specific agglutinins (here, agglutinins were higher in carriers; antitoxins were somewhat lower in carriers). The nature of the immunological shifts in the body, with respect to staphylococci might explain the appearance of carriers. Figures 3; references 4, Russian.

USSR

UDC 616.988-036.25

NEW AND PARTICULARLY DANGEROUS INFECTIOUS DISEASES

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2, 1978 pp 12-18 manuscript received 5 Jul 77

MYASNENKO, A. M. and USKOV, V. N., Institute of Virology imeni Ivanovskiy, Academy of Medical Sciences USSR, Moscow

[Abstract] A brief review is provided of Marburg virus disease, which was first identified as a specific nosologic entity in 1967, and Lassa fever, which was identified in 1969. The review covers available knowledge on the natural history of these viral diseases, nidation, characteristic clinical features, treatment, prevention, and the biology of the viruses in question. References 44: 3 Russian, 41 Western.

USSR

UDC 576.858.77.095.38:595.771

EFFECTS OF DENSONUCLEOSIS VIRUS ON AEDES AEGYPTI IMAGO

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 6, 1977 pp 736-741 manuscript received 22 Oct 76

KARPENKO, L. V., TSARICHKOVA, D. B. and KONONKO, A. G., Kiev University imeni T. G. Shevchenko

[Abstract] Histologic studies were conducted on the effects of infection of Aedes aegypti during the larval stage with densonucleosis virus. Evaluation of the data demonstrated that the virus infects and multiplies in all tissues with enlargement of the nucleus, but shows particular predilection for fat tissue, muscles, intestines, and enocytes; the infection continues in the imago stage with manifestations of general debility. Infected A. aegypti are generally unable to free themselves from pupal exuvium, give evidence of disturbed ovogenesis, alterations in gonotrophic relationships, and high imago mortality. Figures 6; references 23: 15 Russian, 1 Ukrainian, 7 Western.

USSR

UDC 576.851.71.095.38:576.895.421].095

BIOLOGICAL PROPERTIES OF RICKETTSIA BURNETII ISOLATED FROM DIFFERENT SPECIES OF IXODID TICKS

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 6, 1977 pp 716-721 manuscript received 22 Apr 77

PCHELKINA, A. A., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

[Abstract] Studies were conducted on the virulence and antigenicity of *Rickettsia burnetii* isolated from ixodid ticks in various regions of the USSR. Virulence studies on golden hamsters, mice and guinea pigs showed that the strains of *R. burnetii* from *H. asiaticum* and *H. anatolicum* (Central Kara-Kum desert) and *I. redikorzevi* (mountainous region of Central Kopetdag) possessed the highest virulence for these animals, while the strains of *R. burnetii* isolated from *D. marginatus* (steppe region of Kazakhstan) and *I. persulcatus* (southern taiga forest of Korov Oblast) were significantly less virulent and did not lead to death of host animals. Complement fixation studies demonstrated that the highest antibody response in guinea pigs was elicited by *R. burnetii* isolated from *H. asiaticum*, *H. anatolicum*, and *I. redikorzevi*. Figures 1; references 18: 15 Russian, 1 Czech, 2 Western.

USSR

UDC 576.895.421.01:631.6](470.24)

CHANGES IN THE POPULATION DENSITY OF IXODID TICKS ON RECLAIMED LANDS IN THE NOVGOROD OBLAST

Moscow MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLEZNI in Russian No 6, 1977 pp 712-716 manuscript received 9 Nov 76

FEDOROVA, V. G., Novgorod Oblast Sanitary and Epidemiologic Station

[Abstract] Studies were conducted in the Novgorod Oblast to determine the effects of land drainage on the population densities of the ticks *Ixodid persulcatus* and *Dermacentor pictus* during the period 1967-1975. The results showed that during the second year after drainage the population density of *I. persulcatus* increased 7-18-fold in the vicinities of two villages (Lesnaya and Nagovo) in the drained regions, while no similar increase was evident in undrained lands (Sosnovka village). The population density of *I. persulcatus* remained elevated for ca. 4 years after drainage. A marked increase in the population density of *D. pictus* occurred during the 3d and 4th year in the drained areas only. The low population density of critecine rodents in the drained areas could not account for the rise in *I. persulcatus* and *D. pictus*. Figures 3; references: 5 Russian.

USSR

UDC 616.981.452+616.981.455]-036.21(479.25)

STUDIES ON NATURAL FOCI OF TULAREMIA AND PLAGUE IN ARMENIA BASED ON SEROLOGIC EXAMINATIONS OF BIRD PELLETS AND EXCRETA OF PREDATORY MAMMALS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian  
No 2, 1978 pp 111-115 manuscript received 4 Feb 77

DOBROKHOTOV, B. P., MNATSAKANYAN, A. G., MESHCHERYAKOVA, I. S. and RUDNEV, M. M., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences; Armenian Antiplague Station, Yerevan, and the Caucasus and Transcaucasus Antiplague Institute, Stavropol'

[Abstract] Bacteriologic and serologic (antigen neutralization) tests were conducted at 37 sites in central and northwestern Armenia in order to evaluate the prevalence of tularemia and plague in 1974 among small mammals and birds. Bacteriologic studies led to the identification of 40 strains of tularemia and 619 strains of the plague bacillus. Serologic examinations of the mammalian excreta and mummified cadavers and bird pellets showed that 20 of the selected sites were positive for tularemia and 10 for plague and, furthermore, that the infections were concurrent in 5 of the sites. Generally, the percentage of positive samples ranged from 1 to 8% per site indicating a low level of disease during 1974; however, in 3 sites the percentage of positive samples was 10-17% for tularemia, and in 2 sites 13-15% of the samples were positive for plague. The range of serologic titers from 1:12 to 1:128 for tularemia and 1:12 to 1:1428 for plague suggested that current and past infections are being detected. The findings also demonstrated that the plague bacillus circulates almost exclusively among field mice under natural conditions, whereas tularemia was detected in 73.4% of the field mice and 19% of the Transcaucasian hamsters. Figures 2; references 11, Russian.

Hydrobiology

USSR

UDC 57(09)

PACIFIC OCEAN RESEARCH INSTITUTE OF FISH HUSBANDRY AND OCEANOGRAPHY (TINRO)

Vladivostok BIOLOGIYA MORYA in Russian No 3, 1978 pp 86-88

[Abstract] A historical sketch is provided of the Pacific Ocean Research Institute of Fish Husbandry and Oceanography (TINRO), which was founded by K. M. Deryugin as the Pacific Ocean Commercial Research Station in 1925, renamed the Pacific Ocean Institute of Fish Husbandry in 1930, and finally transformed into TINRO in 1934. Following K. M. Deryugin, the Institute was headed in turn by A. N. Derzhavin, P. L. Pirozhnikov, P. A. Moiseyev, A. G. Kaganovskiy, K. I. Panin, and I. V. Kizevetter. On 1 January 1978 the TINRO scientific force consisted of 518 scientists, including 4 at the doctorate level and 107 candidates, working at the Vladivostok, Magadan, Amur and Sakhalinsk branches. In addition, TINRO's mechanical/technical shop employs 98 staff personnel. During its 52 years of existence TINRO has produced 2,400 various publications including 100 issues of IZVESTIYA TINRO, 209 books and brochures, and several thousand articles in Soviet and non-Soviet journals. TINRO's library contains 96,500 volumes and the archives list 14,200 manuscripts. A list of institute publications is provided, as well as a photograph of the building in which it is housed.

Immunology

USSR

UDC 615.373:576.851.45.077.3].036.8

EFFECTIVENESS OF A TULAREMIA ANTIBODY/ERYTHROCYTE DIAGNOSTIC REAGENT IN THE DETECTION OF TULAREMIA ANTIGENS AND ANTIBODIES

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2, 1978 pp 61-64 manuscript received 23 Feb 77

SHMUTER, M. F., AYKIMBAYEV, M. A., YELYUBAYEVA, A. M., BRIKMAN, D. I. and CHARNAYA, YE. F., Central Asia Scientific Research Plague Control Institute, Alma-Ata

[Abstract] Tests were conducted to evaluate the sensitivity and specificity of tularemia antibody/erythrocyte (AE) diagnostic reagent in detecting the Vi antigen in 97 heat killed tularemia cultures and 114 cultures prepared from other microorganisms (plague, listeria, pateurella, brucellosis, salmonella, etc.), as well as in 313 tissue suspension from the cadavers of 209 tularemia-infected albino mice in various stages of decomposition and 104 uninfected control mice, employing a passive hemagglutination test. Under the conditions employed the results showed absolute specificity and a high degree of sensitivity; highest titers were seen with the more virulent tularemia strains and more of the specific microbial antigen was preserved in fresh cadaveric tissues than those evidencing decomposition. An antigen neutralizing test was conducted with sera from 92 vaccinated or convalescent individuals, rabbits, and guinea pigs using E/A. Specificity and high sensitivity were again demonstrated; however, the complicated nature of the antigen neutralizing test for detecting specific antibodies will preclude this test from routine use for clinical purposes. References 4, Russian.

USSR

UDC 615.373.39.015.4

AVIDITY OF SNAKE VENOM-NEUTRALIZING ANTISERA

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2, 1978 pp 115-118 manuscript received 6 Apr 77

ABIDOV, A. A., LISOCHELENKO, L. G. and ZAIDOVA, S. M., Tashkent Scientific Research Institute of Vaccines and Sera

[Abstract] Tests were conducted on mice to determine the avidity of monovalent and polyvalent antisera against snake venom [cobra, echis, gyurza (*Vipera libeti na*)] raised in horses. Avidity was determined by the survival of 16-18 gm albino mice injected intravenously with antiserum/venom mixture obtained immediately after mixing or after storage in a thermostat for 5 to 45 min. Studies with gyurza venum showed that the avidity of antiserum against the native toxin was 4-fold greater than of antiserum raised against denatured venom. Furthermore, polyvalent antisera showed greater avidity for echis and gyurza venom ( $P < 0.05$ ) than did the corresponding monovalent sera. In the case of cobra venom no significant difference in avidity was apparent. References 9: 8 Russian, 1 Western (cited in Soviet journal).

USSR

UDC 576.851.553.097.35

CL. BOTULINUM A, E AND F AUTOLYSINS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2, 1978 pp 141-142 manuscript received 24 Jun 77

ISPOLATOVSKAYA, M. V., SHAPOSHNIKOVA, G. M., CHULKOVA, I. F. and ANISIMOVA, L. I., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

[Abstract] Investigations conducted on the nature of the autolysins present in Cl. botulinum A strain 98, E strain 188, and F strain 470 demonstrated that the respective cultures were most susceptible to lysis when 24 hr old at pH 6.9 in 0.05 M phosphate buffer at 37°, resulting in lysis of 90%, 55%, and 75 % of the cells after 4 hr of incubation, respectively. Under identical buffer and incubation conditions the corresponding lysis of cell wall preparations was 70%, 44%, and 14.8%, respectively. Further studies showed autolysin to be present in both cell wall and cytoplasmic preparations, and that it was readily released from the cell wall by repeated freezing and thawing. Zinc, magnesium, calcium or nickel ions at  $10^{-3}$  M concentration inhibited the lytic activity by 40, 50, 60, and 100%, respectively. Dithiotreitol at a concentration of  $10^{-4}$  M was without effect in the case of the 470 autolysin. Autolysin activity was at a minimum during actual lysis and spore formation, and its relationship to the release of toxin has not been established.

USSR

UDC 612.017.1:658.386.37(472.2)"1977"

SECOND ALL-UNION EDUCATION SEMINAR ON IMMUNOLOGY

Moscow ARKHIV PATOLOGII in Russian No 1, 1978 p 93

GRITSMAN, A. YU., candidate of medical sciences, Moscow

[Abstract] The 2d All-Union Educational Seminar on Immunology was held 6-14 June 1977 in the Estonian SSR. It was organized by the Ministry of Health USSR, the Academy of Medical Sciences USSR, and the Institute of Epidemiology and Microbiology imeni N. F. Gamaleya of the Academy of Medical Sciences USSR. The purpose of the seminar was to fulfill an advanced training role in immunology for the 150 participants representing numerous cities in the USSR through lectures and seminars conducted by leading Soviet immunologists. Future courses of this nature should be organized to permit participation by a larger number of "students," and coverage should be accorded to such topics as immunopathology and immunomorphology which were neglected at this seminar.

USSR

UDC 615.31:547.869.2].014.46

## IMMUNOTROPIC ACTIVITY OF ADAPIPRAZINE

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian No 5, 1977 pp 573-578  
manuscript received 22 Dec 76

KOVALEV, I. YE., DURAKOVA, L. I., KOVALEVA, V. L., SHMAR'YAN, M. I., KLIMOVA, N. V., LAVROVA, L. N. and SKOLDINOV, A. P., Department of Immuno-pharmacology, Scientific Research Institute for the Biologic Testing of Chemicals, Kupavna, and the Experimental Technical Department, Institute of Pharmacology, Academy of Medical Sciences USSR, Moscow

[Abstract] Investigations conducted to establish the immunotropic spectrum of a new phenothiazine derivative, adapiprazine ( $10'-(\gamma[N-(2-adamantyl)-piperazinyl-4]propyl)2'$ -chlorophenothiazine.2HCl) showed that intraperitoneal administration of 0.25-5.0 mg/kg of adapiprazine to male tetrahybrid mice (A/He(A) x Balb/c(C) x C57B1/6(B6) x CC57W(W)) during the period of 4 days before to 1 day after immunization with sheep erythrocytes (0.5 ml of 5% suspension, intraperitoneally) resulted in depression of the primary hemolysin and hemagglutinin responses, with the anamnestic response either depressed or enhanced. However, administration of adapiprazine before secondary immunization resulted in suppression of the secondary response. The doses leading to immunosuppression were ca. 100th of the LD<sub>50</sub> dose and showed greatest effectiveness when administered 3 to 2 days before immunization. Studies on cellular immunity demonstrated that adapiprazine prolonged survival of skin allotransplants from CBA mice to C57B1 from an average of 7.2 days in untreated recipients to 10.7 days in adapiprazine-treated mice. At  $10^{-5}$  molar concentration, adapiprazine did not affect spontaneous leukocyte migration from capillaries nor immune rosette formation. Figures 3; references 16: 8 Russian, 8 Western.

USSR

UDC 615.332(Grisinum).015.46-057

## EFFECTS OF OCCUPATIONAL CONTACT WITH GRISEIN ON NATURAL IMMUNITY

Moscow ANTIBIOTIKI in Russian No 4, 1978 pp 321-325 manuscript received 23 Aug 77

POBEREZKINA, D. YA. and IVASHINA, S. A., All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics, Kiev

[Abstract] Several aspects of natural immunity were investigated in the case of 78 male and female subjects occupationally exposed to grisein who were otherwise clinically healthy, with comparative control data obtained from 20 subjects without such exposure. The duration of exposure for the experimental group ranged from 1 to 20 years; the age range for both groups

was in the 20-50 year bracket. Contact with grisein was seen to induce certain changes in the state of natural immunity which were dependent on age of the subjects, duration of contact, and intensity of contact with grisein. In general, serum and saliva lysozyme levels were depressed in the experimental group, as well as the percentage of phagocytosis by blood polymorphs; however, the digestive activity and the phagocytic index were somewhat elevated in the exposed individuals. Bacteriologic studies resulted in the isolation of ca. 4 fold more grisein-resistant colonies from exposed subjects, as well as in greater numbers of mannitol fermenters and hemolytic microorganisms. The findings indicate that prolonged occupation exposure to grisein has negative effects on the state of natural immunity. References: 14 Russian.

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Industrial Microbiology

USSR

UDC 576.851.513.095.35

ANTIBIOTIC PRODUCTION BY PLASMID-CONTAINING AND PLASMID-FREE BACILLUS PUMILUS STRAINS

Moscow ANTIBIOTIKI in Russian No 4, 1978 pp 291-294 manuscript received 7 Sep77

ABRAMOVA, M. A., LUKIN, A. A. and KOZ'MINA, L. M., All-Union Scientific Research Institute of the Genetics and Selection of Industrial Micro-organisms, Moscow

[Abstract] Conditions are presented for the cultivation and testing of several strains of *Bacillus pumilus* (ATCC-12140, ATCC-7065, NRS-576, W-20) for antibiotic activity in relation to the presence of absence of plasmids. The resultant data demonstrated that production of antibiotics can be under the control of either the bacterial chromosome or the plasmid genetic material; antibiotic producing strains ATCC-7065-K and W-20 were plasmid-free, while NRS-576 was positive for both, antibiotic production and the presence of a plasmid. The antibiotic(s) in question were bactericidal only with respect to Gram positive organisms. Figures 2; references 22: 8 Russian, 14 Western.

## Industrial Toxicology

USSR

UDC 646.15:546.75

### MORBIDITY INVOLVING TEMPORARY LOSS OF WORKING CAPACITY IN CHEMICAL PLANT WORKERS

Ashkhabad ZRDAVOOKHRANENIYE TURKMENISTANA in Russian No 7, Jul 77 pp 13-16

BEGISHEVA, A., CHARYYEV, O. and ASTANAKULOV, K. M., Ashkhabad Scientific Research Institute of Epidemiology and Hygiene imeni S. M. Dursunova

[Abstract] Losses of man-hours due to sickness continue to plague Soviet industry. This report is a study of the situation at the Chelenskiy Chemical Plant (ChKhZ) for the five year period 1971-75. Sickesses considered were distributed into 20 nosological forms, some of the diseases being grouped on the basis of similarity and character of the disease course. The main index of cases per 100 workers for the five years was 76.02 per year, mean duration 11.26 days. Variation per year was insignificant, except that 1971 had slightly lower incidences. Diseases which involved temporary invalidity at the ChKhZ were respiratory affections, especially, cardiovascular problems, skin, peripheral nervous system, digestion, hepatic and renal disorders and eye problems. Cardiovascular disorders included chronic rheumatic disease, heart disorders of a non-rheumatic or vascular nature and hypertension. Chronic diseases, especially, e.g., tuberculosis, diseases of the liver and gall bladder and rheumatism caused most of the lost time. Unfavorable air conditions in the plant, and exposure to vapors of iodine and bromine contribute to the morbidity of the workers. References 5, Russian.

USSR

UDC 628.312:632.95:614.777

### EFFECTIVENESS OF WATER PURIFICATION IN ELIMINATING ORGANOPHOSPHORUS CHEMICALS

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 18-23

SHTANNIKOV, YE. V., professor and PODZEMEL'NIKOV, YE. V., Saratov Medical Institute

[Abstract] Investigations were conducted to test the effectiveness of methods commonly utilized in water purification (coagulation, sedimentation, filtration, chlorination) in diminishing 2 phosphoorganic pesticides--metaphos and chlorophos--to innocuous concentrations. The results of various detailed analyses indicated that the methods commonly employed were ineffective in providing safe water supply to the populace in situations in which the concentrations of these pesticides exceeded the maximum permissible levels 3-5 fold, conditions which usually prevail in regions with such contamination. However, the following steps were established to reduce these organophosphorus compounds to safe levels: preliminary

chlorination (3-4 mg/liter chlorine) and flocculation with polyacrylamide or VA-2 cationic flocculant (2-3 mg/liter) + coagulation with  $Al_2(SO_4)_3$  (30-40 mg/liter) + sedimentation (1.5-2 h) + filtration (sand and crushed anthracite) + chlorination (0.3-0.5 mg/liter residual chlorine). Figures 1; references 1

USSR UDC 612.6.052.014.46:665.44+615.277.4:665.44].065:612.6.052

#### STUDIES ON THE MUTAGENIC ACTIVITY OF 3,4-BENZPYRENE

Leningrad GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 102-103

KRASOVSKIY, G. N., SOKOLOVSKIY, V. V. and VARSHAVSKAYA, S. P., Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

[Abstract] In order to determine whether doses of 3,4-benzpyrene (BP) previously established to be weakly carcinogenic were mutagenic, BP in triethyleneglycol was administered by catheter 10 times to 2-3 month old mice at 2 day intervals (0.001 mg, 0.01 mg, or 0.1 mg/single dose). The percentage of chromosomal aberrations--used as an indicator of mutagenicity--in bone marrow cells of the experimental mice did not differ from that of BP-untreated control mice, indicating that at the doses tested BP did not act as a mutagen. It appears that BP is mutagenic at doses higher than those employed in this study. References 1

USSR UDC 613.644+613.164]-07:681.31

#### COMPUTER AND MAGNETIC TAPE-BASED METHOD FOR THE MEASUREMENT AND CALCULATION OF VARIABLE NOISE LEVELS

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 75-79 manuscript received 22 Jun 77

ARAKELYAN, A. G., candidate of biological sciences, KURTANDZHYAN, T. P., MELKONYAN, D. S., candidate of technical sciences and PARSADANYAN, E. I., Armenian Scientific Research Institute of General Hygiene and Occupational Diseases, Yerevan

[Abstract] Algorithms are presented for the automated calculation of equivalent noise levels,  $L_{Aeqv}$ , based on tape recordings of the noise levels and subsequent treatment of the noise data by a computer to yield the  $L_{Aeqv}$ . The time required for this operation does not exceed 30 min,

which is 10-15 times faster than the manual methods currently employed in a number of cities in the USSR for lack of sophisticated equipment imported from abroad. This approach has been approved for use in Yerevan. Figures 3; references 6: 4 Russian, 2 Western.

USSR

UDC 613.632.4+614.72]-074:543.42.062

COMPUTER PROGRAM FOR GAS CHROMATOGRAPHY/MASS SPECTROMETRY DETERMINATION OF TOXIC AGENTS IN THE AIR

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 68-73 manuscript received 10 Jun 77

DMITRIYEV, M. T., RASTYANNIKOV, YE. G. and YELOYAN, V. R., Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

[Abstract] The mathematical considerations and theoretical foundations are outlined for creating computer programs of mass spectra obtained after gas chromatographic separation of toxic agents responsible for air pollution. A particular difficulty encountered in mass spectrographic analysis of such toxic agents is related to the fact that many of the spectra overlap, e.g., ethylene and carbon monoxide, and that side products may be formed in the spectrometer, e.g.,  $H_2^+$ . A description is provided of 3 programs and their specific utilization, as well as a block diagram for the over-all scheme. Figures 1; references 13: 9 Russian, 4 Western.

USSR

UDC 615.285.7.025.1.099

FEATURES OF LINDANE TOXICITY IN ALBINO RATS FOLLOWING ENTRY THROUGH RESPIRATORY AND INTRAGASTRIC ROUTES

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 41-44 manuscript received 14 Oct 77

VOYTENKO, G. A., All-Union Scientific Research Institute of the Hygiene and Toxicology of Pesticides, Polymers and Plastics, Kiev

[Abstract] Lindane (gamma isomer of hexachlorocyclohexane) toxicity was investigated in relation to routes of administration in chronic (4 month) experiments on albino rats (90-120 gm at time of commencement). Administration via the respiratory tract (inhalation;  $1.7 \pm 0.05$  mg/cm.<sup>3</sup>) led to an increase in serum alkaline phosphatase (AP) activity by 139% within 1 month,

followed by 130% decrease by the 4th month; intragastric administration (3 mg/kg) led to a 108% increase by the 2d month, and administration via combined routes (1.5 mg/kg intragastrically followed by  $0.84+0.11$  mg/cu.m inhalation) resulted in an increase in AP activity of 81% by the 4th month. Effects on oxidative processes were variable as indicated by serum lactic dehydrogenase (LDH) levels; however, intragastric administration resulted in a 45% decrease in LDH activity after 2 months, a decrease of 73% and 33% after 1 and 3 months, respectively, following administration by inhalation, and depression by 44% 1 month after administration by combined routes. Administration by inhalation alone did not result in Lindane accumulation in the brain; however, brain levels reached 3.1-4.0 mg/kg following administration by the other routes and liver levels constituted 0.24-2.0 mg/kg. Kidney levels ranged from trace quantities to 8.8 mg/kg. The results suggest that establishment of sanitary parameters for public health reasons should take into consideration the routes of entry of Lindane into the body. References 2: 1 Russian, 1 Western.

USSR

UDC 613.55

CURRENT APPROACHES TO ESTABLISHING SANITARY SAFE ZONES AROUND INDUSTRIAL COMPLEXES

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 28-33 manuscript received 13 Apr 77

GIL'DENSKIOL'D, R. S. and KUSHNER, L. F., Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman, and the "Leningrad Industrial Planning Project" Planning Institute

[Abstract] An approach is outlined for computer-based establishment of sanitary safe zones around class I and II industrial complexes based on instructions incorporated in Sanitary Norms Instructions 369-74 (SN 369-74). The calculations are based essentially on geographic and climatic factors as they affect dissemination of  $\text{SO}_2$  and  $\text{NO}_2$ , which are regarded as the major industrial pollutants. Among the shortcomings of the approaches utilized at the present time are inadequate knowledge of the actual levels of pollutants emitted into the air for plants which are in planning stages, and the fact that inadequate attention is being accorded to planting green belts, areas of residence, etc. Figures 2; references 6, Russian.

USSR

UDC 613.4+614.777]:661.185

BIOLOGICAL EFFECTS OF SEVERAL NEW DETERGENTS AND THEIR SAFE LEVEL IN WATER SUPPLY

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 14-18 manuscript received 19 Nov 76

TRIKULENKO, V. I., L'vov Scientific Research Institute of Epidemiology and Microbiology

[Abstract] Extensive toxicologic studies were conducted on 3 new Soviet commercial detergents--alkamon DS [sic], etamon DS [sic], and sintamid-5 [sic]--which demonstrated that in the case of rats and mice the corresponding LD<sub>50</sub> values were 379+32.1 and 300+23.4 mg/kg, 4425+381 and 3500+305 mg/kg, and 19,000+1473 and 17,900+1100 mg/kg, respectively. Other studies involving additional species pointed to embryotropic effects and mutagenic activities, which were most pronounced for alkamon SD. Over-all evaluation of the data obtained from experiments on organoleptic properties, allergic complications, and toxic manifestations led to the recommendation that the maximum permissible levels in water supply be established at 0.15 mg/liter for alkamin DS, 4.0 mg/liter for etamon DS, and 0.3 mg/liter for sintamid-5. The results reported here have been presented at a plenum of the section for the protection of reservoirs of the Problems Commission of the Academy of Medical Sciences USSR for "Scientific Basis for Public Hygiene of Inhabited Localities" held in Ryazan in 1974. References 11: 7 Russian, 4 Western.

USSR

UDC 614.72:546.74]:613.155.3

EXPERIMENTAL SUBSTANTIATION FOR MAXIMUM PERMISSIBLE CONCENTRATIONS OF SOLUBLE NICKEL COMPOUNDS IN THE AIR

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 8-11 manuscript received 28 Feb 77

ITSKOVA, A. I., YELAKHOVSKAYA, N. P., YELISEYEV, I. N. and BONASHEVSKAYA, T. I., Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

[Abstract] A 6 month study was conducted to determine the permissible air concentration of nickel chloride through exposure of outbred male rats to hydroaerosols containing nickel chloride at various concentrations (0.0002-0.5 mg/cu.m) 24 hr a day. The physiologic parameters which were evaluated included hematology (erythrocyte, hemoglobin, leukocyte levels and leukocyte formula), bone marrow cytology, thyroid function (iodine uptake and blood iodine binding protein), and lymphocyte catalase, arginase, succinate dehydrogenase, and alphaglycerophosphate dehydrogenase activities. The

resultant toxicologic data indicated that the threshold air concentration for toxic effects was 0.001 mg/cu.m, while a concentration of 0.0002 mg/cu.m was innocuous. On the basis of these findings the maximum permissible concentration was established at 0.0001 mg/cu.m (in terms of nickel ions). References 5, Russian.

USSR

UDC 613.6+615.917.2/.9

DETECTION OF EARLY CHANGES OF REACTIVITY IN SUBJECTS HAVING CONTACT WITH PESTICIDES

Kiev VRACHEBNOYE DELO in Russian No 3, 1978 pp 136-140

IVASHINA, S. A., POBEREZKINA, D. YA., KACHALAY, D. P. and KASKEVICH, L. M., Department of Clinical Pathology of Chemical Etiology All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics, Kiev

[Abstract] Changes in nonspecific immunity frequently are noted earlier than other symptoms. Changes in the content of lysozyme in the blood and saliva were measured, using the method of V. T. Dorofeychuk (1968); M. V. Markaryan's (1974) modification of Ye. A. Kost's method of studying phagocyte activity was used. A total of 203 individuals, of whom 105 had contact with chlorinated hydrocarbon pesticides, 78 with the antibiotic grisin, 59% were healthy, 25% had functional changes in the nervous system and 16% had pathologies of the hepatobiliary system. There were sharp reductions in blood and saliva lysozyme among the healthy individuals who had come in contact with these substances and depended upon the duration of work. A table presents statistical data on phagocytosis. There are also changes in the qualitative composition of skin microflora. 90% of those in contact with pesticides and suffering diseases of the hepatobiliary system experienced increased microbe dissemination and changes in the depth of microflora. Changes in lysozyme were more pronounced in individuals who had worked more than 40 years. There were also reductions in the absorptive and digestive functions of neutrophils for those who had worked for only 5 years or more. There were thus substantial changes in natural immunity. References 9, Russian.

USSR

UDC 616-056.3-074

CHEMICAL ALLERGENS IN THE DIAGNOSIS OF PRECLINICAL ALLERGIC PROCESSES

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 11, 1977 pp 53-56  
manuscript received 5 May 77

BRUSILOVSKIY, YE. S. and POLYAK, N. R., Allergy Branch, All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers, and Plastics

[Abstract] Various chemicals were employed as allergens for in vivo testing of 345 individuals for the presence of allergy without frank clinical manifestations. The results revealed asymptomatic (latent) allergic processes in 78 subjects. In 19 of the subjects the etiologic agent was identified as DDT, in 13 as kaprolaktam [sic], in 11 as chlorophos, in 7 as hygromycin or tetramethylthiuram disulfide (TMDT), in 6 formaldehyde, in 5 meta-phenylenediamine, in 2 antibiotics or maleic anhydride, and one case each was due to acrylonitrile, monochloramine, toluylenediisocyanate, diphenyl-guanidine, polychloropynene [sic], or dibutylphthalate. In one patient with bronchial asthma TMDT and tsiram [sic] were identified as the etiologic agents, while TMDT and chlorophos were implicated in another patients with rhinitis. During the period of observation latent allergy assumed frank clinical manifestations in 2 cases. References 3, Russian.

Microbiology

USSR

UDC 576.851.55.097.2

STUDIES ON ANTIGENIC DIFFERENCES BETWEEN CL. SORDELLII AND CL. BIFERMENTANS

Moscow ZHURNAL MIKROBIOLOGII EPIDEMIOLOGII I IMMUNOBIOLOGII in Russian No 2, 1978 p 138 manuscript received 24 May 77

YEGOROVA, G. K., FEDOROV, YU. M. and BOCHAROVA, N. G., State Scientific Research Institute of Standardization and Control of Biomedical Preparations imeni Tarasevich

[Abstract] Somatic protein antigens of *Cl. sordellii* strains 831, 21, 309, 3, and 52 and of *Cl. bifermentans* strains 240, 6, 19, and 60 were subjected to polyacrylamide gel electrophoresis. *C. sordellii* yielded 8-9 components with fast and moderate mobilities, while *Cl. bifermentans* yielded 5-6 rapid components. These findings provide additional proof for the view that these microorganisms constitute different species.

USSR

UDC 576.893.19:597.553.2

BIOLOGICAL CHARACTERISTICS OF THE INVASIVE STAGE OF MYXOSOMA CEREBRALIS (MYXOSPORIDIA: MYXOSOMATIDAE)

Leningrad PARAZITOLOGIYA in Russian No 1, 1978 pp 15-12

USPENSKAYA, A. V., Institute of Cytology, Academy of Sciences USSR, Leningrad

[Abstract] Data are reviewed which pertain to the infectivity of *Myxosoma cerebralis* spores in trout fry. Evaluation of the accumulated biologic and cytochemical data demonstrated that prolonged storage in water (4 months), as well as repeated freezing, thawing, and drying did not diminish infectivity of the spores. Furthermore, evidence was obtained that a period of maturation in the external environment was a prerequisite for invasiveness and that the life cycle of the parasite was attuned to seasonal cycles of the host. Prolonged storage in water did not lead to fusion of nuclei in the spores; invasiveness of the host from the external environment was dependent on the nematocyst. References 30: 13 Russian, 17 Western.

Molecular Biology

USSR

UDC 576.851.132.095.383:547.963.32

CHARACTERISTICS OF PLASMID DNA OF PSEUDOMONAS PUTIDA

Moscow MIKROBIOLOGIYA in Russian Jan/Feb 78 manuscript received 2 Mar 77

AGABALYAN, A. S., ZAKHARYAN, R. A., AKOPYAN, S. M., BAKUNTS, K. A., ISRAYELYAN, YU. A., and AZARYAN, N. G., Institute of Experimental Biology, Academy of Sciences Arm SSR

[Abstract] Previous studies indicate that genes giving *Pseudomonas putida* the ability to catabolize certain carbon source substances are of extra-chromosomal origin. In the present work, *Pseudomonas putida* G7 strain was used as the donor of plasmid DNA scope examination. Chromatography with sepharose 4B and kieselgur with methylated albumin revealed two distinct peaks for the occurrence of DNA. These consist of a mixture of linear and circular molecules in the first peak and only circular molecules in the second fraction. The molecules have a weight of from 3 to  $36 \times 10^6$  Daltons, with the circular molecules being on the heavy end. The presence of circular molecules indicates extrachromosomal DNA. There is also plasmid DNA from chromosomal fractions. Palchudhuri's and Chakrabarty's studies (1976) on the chromosomal localization of biodegradation plasmids are confirmed. The ratio of extrachromosomal to chromosomal location is determined by plasmid genotype. Extrachromosomal localization is insignificant for biodegradation plasma in *Ps. putida* G7. References 12: 2 Russian, 10 Western.

USSR

UDC 576.851.48.097.22.095.5

INTEGRATION OF RP-4 PLASMID INTO E. COLI CHROMOSOME

Moscow ANTIBIOTIKI in Russian No 4, 1978 pp 337-341 manuscript received 7 Oct 77

DANILEVICH, V. N., STEPANSHIN, YU. G., VOLOZHANTSEV, N. V., AMOSENKO, F. A., and GOLUB, YE. I., All-Union Scientific Research Institute of Antibiotics, Moscow

[Abstract] Investigations were conducted to determine if a transposable element (transposon) present in plasmid RP-4--which is capable of insertion into bacterial chromosomes--could function to promote the insertion of the circular genome of RP-4 into the bacterial chromosome through recombination because of the identical nucleotide sequences--represented by the transposon--on both the plasmid and the bacterial genome. Employing *E. coli* 411 carrying the transposon in question, Tn-1, which was derived from RP-4, showed that a mutant plasmid derived from RP-4, pEG-1, was inserted into Tn-1 carrying *E. coli* chromosomes with a frequency of 0.10 to 0.70, while insertion into Tn-1-free chromosomes proceeded at a rate of  $4 \times 10^{-5}$  to  $2 \times 10^{-4}$ . The insertion process was shown to be *recA* dependent recombination. Figures 2; references: 3 Western.

USSR

UDC 575.113

TRANSPOSON-MEDIATED INSERTION OF R PLASMID INTO BACTERIAL CHROMOSOME

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 239 No 3, 1978 pp 706-708  
manuscript received 9 Dec 77

DANILEVICH, V. N., STEPANSHIN, YU. G., VOL'ZHANTSEV, N. V. and GOLUB, YE. I.,  
All-Union Antibiotics Scientific Research Institute, Moscow

[Abstract] Numerous R plasmids have been found to contain transposable elements (transposons) which determine genetic resistance to antibiotics and are capable of insertion into bacterial chromosomes. Experimental data have been gathered which were designed to determine whether, once such a transposon was located on the bacterial chromosome, it would favor insertion of an R plasmid (carrying such a transposon) into the chromosome via recombination between the R plasmid and the chromosome as a result of the identical sequence of nucleotides present on both DNA molecules. Results obtained with the pEG-1 plasmid, a mutant of RP4 IncP ApTcKm plasmid, carrying the Tn-1 transposon, and rec<sup>+</sup> and recA E. coli strains lacking or carrying Tn-1 on their chromosome, demonstrated that insertion of the RP4 plasmid into the bacterial chromosome proceeds in 2 stages: 1) insertion of Tn-1 into the bacterial chromosome; and 2) recA-dependent recombination between the translocated Tn-1 and the Tn-1 transposon on RP4. The present findings demonstrate a new functional role for the genetic transposable elements. References 6: 2 Russian, 4 Western.

Pharmacology

USSR/GDR UDC 615.332 (Morphocyclinum+Tetraverinum+Oxytetracylinum) .015.15

STUDIES ON THE PHARMACOKINETICS OF MORPHOCYCLINE, ROLITETRACYCLINE AND OXYTETRACYCLINE

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian No 5, 1977 pp 569-573  
manuscript received 5 Feb 77

FRANKE, G., AMON, I. BLAIER, G., MEISEL, M. and GYULLER, G., Department of Clinical Pharmacology, Medical Faculty, Ernst-Moritz-Arndt University, Greifswald, GDR

[Abstract] Comparative studies were conducted on the pharmacokinetics of morphocycline [sic], rolitetracycline, and oxytetracycline following intravenous administration alone or in combination in various doses to 10 male and 9 female patients (22-71 years of age) without liver or kidney damage. Determinations of serum and urinary levels showed that the most rational therapeutic approach consisted of an initial 300 mg dose of morphocycline followed by 150 mg doses at 12 hr intervals. The high rate of diffusion of the tetracyclines into the extravascular space was due to low intravascular binding to albumin: 31.5% of the administered dose of morphocycline, 41.2% of oxytetracycline, and 34.2% for rolitetracycline. Figures 4; references: 4 Western.

USSR

UDC 547.615.33:541.64

SYNTHESIS AND PROPERTIES OF SOME DERIVATIVES OF AMYCILLIN BOUND WITH POLYMERS

Moscow BIOORGANICHESKAYA KHIMIYA in Russian No 3, 1978 pp 375-381 manuscript received 3 May 77 and resubmitted after revision 27 Jun 77

PANARIN, YE. F., KOPEYKIN, V. V. and AFINOGENOV, G. YE., Institute of High Molecular Compounds, Academy of Sciences USSR, Leningrad

[Abstract] A study of the dependence of the properties of an antibiotic modified by polymer on the type of antibiotic-polymer bond was performed by producing polymer derivatives of amycillin and copolymers of vinylpyrrolidone where the amycillin is bound through an amide, a urea, an azomethyl or an enaminone group. The study indicated that the adaptation of the antibiotic to the polymer led to reduction of its sensitivity to penicillinase while its antimicrobial properties were maintained. Stable enaminones were most sensitive to penicillin. Schiff bases were found to be most effective in respect to ampicillin-resistant, gram-negative and gram-positive bacteria. Figures 3; references 19: 13 Russian, 6 Western.

USSR

UDC 617-001.085.332 (Lincomycinum)-036.8

SUMMARY OF THE USE OF LINCOMYCIN OVER A 10-YEAR PERIOD (1966-1976) IN CLINICS OF THE CENTRAL SCIENTIFIC RESEARCH INSTITUTE OF TRAUMATOLOGY AND ORTHOPEDY IMENI N. N. PRIOROV

Moscow ANTIBIOTIKI in Russian No 3, 1978 pp 268-272 manuscript received 18 Jul 77

MEL'NIKOVA, V. M., MARKOVA, O. N., GRADSHTEYN, A. I., BAZANOVA, Z. B. and TUZOVA, Z. G., Central Scientific Research Institute of Traumatology and Orthopedics imeni N. N. Priorov, Ministry of Health USSR

[Abstract] Results of parenteral and internal administration of lincomycin to 1063 patients over a 10-year period were reported. Dosages and number of administrations of lincomycin depended upon the age, weight and severity of the condition of the patients. Lincomycin was used in treatment of persons with osteomyelitis or purulent wound infection and was prescribed for prevention of suppuration. In spite of the prolonged use of the antibiotic at the same hospital, it still remains highly effective in treatment of infections, especially bone infections, caused by staphylococci sensitive to it. The 10-year study of the sensitivity of staphylococcus to lincomycin showed only an insignificant increase of resistance to it after this period of time. The study also confirmed the importance of concurrent antibiotic therapy and surgical measures in treatment of bone infections. References 16: 5 Russian, 11 Western.

USSR

UDC 615.015.2:612.64

EFFECTS OF CERTAIN DRUG COMBINATIONS ON INTRAUTERINE DEVELOPMENT

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian No 5, 1977 pp 606-609  
manuscript received 1 Nov 76

BARILYAK, I. R., Medical Genetics Laboratory, Kiev Institute of Pediatrics, Obstetrics and Gynecology imeni Hero of the Soviet Union Professor P. M. Buyko

[Abstract] Experiments were conducted on outbred albino rats to determine whether the embryotoxic effects of chloridine and 6-mercaptopurine could be alleviated by preliminary treatment with agents known to promote disruption of lysosomal membranes. On the 13th day of pregnancy the animals received subcutaneous injections of dimethylsulfoxide (5500 mg/kg), magnesium sulfate (250 mg/kg), insulin (40 IU/kg), or intraperitoneal ethonium (15 mg/kg) or intragastric pentoxy1 (100 mg/kg) followed in 30 min by intragastric chloridine (50 mg/kg) or 6-mercaptopurine (60 mg/kg). Examination of the fetuses on the 20th day showed marked diminution of the teratogenic effects of chloridine and 6-mercaptopurine, including cases in which either teratogen was preceded by a combination of dimethylsulfoxide+ pentoxy1+ethonium. The results indicate that stabilization of the lysosomal membranes appears to be a key factor responsible for the teratogenic properties of chloridine and 6-mercaptopurine. References 11: 9 Russian, 2 Western.

USSR

UDC 615.355:577.152.311.042.5

CENTRAL EFFECTS OF A NEW CHOLINESTERASE REACTIVATOR--DIETHYXIME

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian No 5, 1977 pp 531-535  
manuscript received 24 Sep 76

BEZNOSKO, B. K., VORONOV, I. B., FEYGMAN, E. E. and KRVENCHUK, V. YE., Pharmacology Laboratory, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad and the All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics, Kiev

[Abstract] Experiments were conducted with anesthetized 2.5-4.5 kg cats to establish whether a new cholinesterase reactivator, diethyloxime (S-diethylaminoethyl ester of p-bromobenzothiohydroximic acid-HCl), acts on cholinesterase in brain synapses. The results showed that 20 mg/kg of intraperitoneal diethyloxime administered to cats with blocked peripheral muscarinic cholinoreceptors and hypotension due to armine [sic] (0.075-0.1 mg/kg, iv) resulted in reversal of hypotension and recovery of control level blood pressure, while a reversal was not obtained with a quaternary

nitrogen derivative (dipyroxime). In addition, diethyloxime also overcame armine-induced depression of phrenic nerve action potentials. Figures 2; references 10: 8 Russian, 2 Western.

USSR

UDC 615.212.7:547.943].015.4:616-008.922.1.04

#### EFFECTS OF ACUTE HYPOXIC HYPOXIA ON MORPHINE ANALGESIA

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian No 5, 1977 pp 524-527  
manuscript received 23 Nov 76

STETS, V. R., Department of Pharmacology, Zaporozh'ye Medical Institute

[Abstract] Pressure chamber experiments were conducted on male and female mice (24-30 gm) to establish the effects of acute hypoxic hypoxia (AHH) on morphine mediated analgesia with respect to electric current induced pain. Preliminary studies showed that at equivalent pressures of 5000 m (75 mmHg pO<sub>2</sub>), 7000 m (55 mm Hg), and 9000 m (38 mmHg) pain thresholds increased by 16.4%, 18.1%, and 30.6%, respectively, after 15 min of AHH. Subcutaneous morphine (10 mg/kg) administered 15 min prior to AHH resulted in elevation of the pain thresholds by 155%, 175%, and 219.8%, respectively, at the corresponding 'altitudes'; similar trends were evident with 2.5 and 5 mg/kg of morphine. However, administration of morphine 30 min after AHH commencement diminished the increment by which the pain thresholds were increased. References 10, Russian.

USSR

UDC 611-018.81-08

#### EFFECTS OF SEROTONIN ON THE GROWTH AND DIFFERENTIATION OF HIPPOCAMPAL TISSUE CULTURE

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 1, 1978  
pp 98-106 manuscript received 21 Jun 77

CHUMASOV, YE. I., CHUBAKOV, A. R., KONOVALOV, G. V. and GROMOVA, YE. A., Nervous System Pathology Laboratory, Department of Pathologic Anatomy, Institute of Experiment Medicine, Academy of Medical Sciences USSR, Leningrad, and the Laboratory of Emotional Memory, Department of Memory Problems, Institute of Biophysics, Academy of Sciences USSR, Pushchino

[Abstract] Light and electron microscopy were employed in following the course of dorsal hippocampal explants obtained from neonatal rats (1-5 days) cultured in roller tubes to ascertain the effects of serotonin

(3 mg/ml). The resultant data indicated that incorporation of serotonin in the culture medium (Eagle's medium with placental human serum, embryonal extracts, glucose, insulin, and penicillin) accelerated growth and promoted neuronal and glial cytodifferentiation, and also facilitated neurono-glial interactions, myelinization, and establishment of synapses. Serotonin was thus demonstrated to promote the growth and differentiation of the various cellular elements in hippocampal culture. Figures 4; references 10: 7 Russian, 3 Western.

USSR

UDC 616.935.-02-07:612.128-07

#### CHANGES IN THE ACETYLCHOLINE-CHOLINESTERASE SYSTEM IN ACUTE DYSENTERY

Minsk ZDRAVOKHRANENIYE BELORUSSII in Russian No 3, Mar 78 pp 46-47  
manuscript received 5 May 77

POLESHKO, D. V., KLYUCHAREV, A. A., VERSHENYA, M. I., VODOP'YAN, A. V. and TERESHCHENKO, G. S., Department of Infectious Diseases, Minsk Medical Institute

[Abstract] In recent years increased study has been devoted to the behavior of the vegetative nervous system during acute dysentery. In the present report 66 patients, 16 to 63 years old, 41 male, 25 female, were examined. Of these 32 had light cases of the disease and 34 had moderately serious forms, 42 had Sonne and 24 had Flexner dysentery. A table presents statistical data on cholinesterase activity in the erythrocytes and plasma in the acute period and recovery. During the acute period, activity of this enzyme increased. This increase depended upon increases in the concentration of acetylcholine. 111 subjects showed an increase in acetylcholine content during the acute period and during clinical recovery, while there was increased cholinesterase activity in the erythrocytes and reduction in the plasma. The normalization of cholinesterase activity and acetylcholine lags behind clinical recovery in acute cases. These changes indicate disturbances in the functioning of the neurohumoral mechanisms, especially changes in the tonicity of the parasympathetic nervous system. References 5, Russian.

USSR UDC 615.212.7:547.413.133.2.2.099.036.11.07.616.61.-008.931:577.152.421

HISTOCHEMICAL STUDY OF THE DISTRIBUTION OF CARBOANHYDRASE ACTIVITY OF THE KIDNEYS IN ACUTE POISONING WITH DICHLORETHANE

Moscow UROLOGIYA I NEFROLOGIYA in Russian No 2, 1978 pp 35-37

BEREZHOV, R. V. and SERGEYEV, S. N., Moscow

[Abstract] Oral doses of dichlorethane result in acute renal failure. The exact nature of the toxic effects has not been well studied. The acid base equilibrium is disturbed, it is thus important to examine the activity of carboanhydrase as a regulator of this equilibrium. Sexually-matured white rats were given 0.1-0.3 and 0.5-1.0 ml of the agent orally in two series of experiments. Acute plethora of the kidneys was noted. Deposits of cobalt sulphide were found in the convoluted tubules of the control group. In the experimental animals there was a sharp increase in the deposits of cobalt sulphide in these tubules. In some of the animals there was a high degree of enzyme activity both in the straight and the collecting tubules. There were sharp increases in enzyme activity and changes in the area of activity which are unusual for normal conditions. This is probably a compensation and adaptation in pH regulation. The accumulations of cobalt sulphide in the glomular apparatus are indications of more fundamental and irreversible changes in the kidneys. References 7: 3 Russian, 4 Western.

Physiology

USSR

UDC 611.814.1-018.13-08:[615.272.6:547.963.32

CYTOPHOTOMETRIC INVESTIGATIONS ON DNA LEVELS IN THE SUPRAOPTIC NEUROSECRETORY NUCLEI OF THE HYPOTHALAMUS

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 1, 1978  
pp 89-92 manuscript received 6 Jun 77

BOGDANOVICH, N. K., Central Pathoanatomic Laboratory, Institute of Human Morphology, Academy of Medical Sciences USSR

[Abstract] Cytophotometric investigations on autopsy material obtained not later than 12 h after death dealt with the level and distribution of DNA in the hypothalamic supraoptic nuclei of 20 subjects (male and female) with a hyperactive hypothalamo-hypophyseal neurosecretory system, with control findings obtained from 5 patients (2 males, 3 females) with a "normal" percentage-wise distribution of cells in various stages of neurosecretion (paraldehyde-fuchsin Gomori staining). The age range of subjects in both groups was 50-70 years. The control subjects showed predominance of diploid and paraploid secretory neurons and glial elements, while the "hypersecretory" group evidenced elevated DNA levels, inclusive of tetraploid neuronal cells and polyplid glial cells. The changes in the latter group were interpreted as reflecting adaptation of the neurosecretory system to a more demanding functional level. Figures 2; references 19: 7 Russian, 9 Western.

USSR

MULTI-CHANNEL DEVICE FOR RADIOTELEMETRY OF ELECTRICAL ACTIVITY OF THE HUMAN BRAIN

Moscow FIZIOLOGIYA CHELOVYEKA in Russian No 2, 1978 pp 366-370 manuscript received 25 Apr 77

DAN'KO, S. G. and KAMINSKIY, YU. L., Institute of Experimental Medicine, Academy of Medical Sciences USSR, Leningrad

[Abstract] Development of a radiotelemetry device has permitted the construction of an apparatus which is simple to prepare and convenient to use for radiotelemetry of the bioelectrical activity of the human brain. The device also provides a possibility for miniaturization of the device and extension of its function importance by development of hybrid microcircuits for specific applications. The radiotelemetry device provides for collection, magnetic registration and input into an electronic computer, of bioelectrical signals, unified on the basis of the principle of time-pulsed conversion of voltage into binary code in combination with time divisions of the channels. Readings from clinic patients were obtained by an 8-channel preliminary amplifier of biopotentials of the brain, a commutator-submodulator and a transmitter. A block diagram of the device, a schematic drawing of the

device for obtaining obductions from the patient and a photograph of the apparatus is contained in the article. Figures 4, references 8: 7 Russian, 1 Western.

USSR

UDC 591.481.1:572.02]-08:591.3

#### ENVIRONMENTAL EFFECTS ON BRAIN ONTOGENESIS

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 1, 1978  
pp 106-111 manuscript received 19 Jul 77

DMITRIYEVA, N. I., Laboratory of Comparative Ontogenesis of Higher Nervous Activity, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR

[Abstract] Experimental studies conducted with puppies exposed only to diffuse light during the first few months of life, as well as with congenitally blind mice, demonstrated statistically significant reduction in brain weight and numbers of neurons in comparison with puppies exposed to normal visual stimuli and sighted mice, respectively. Similar investigation with rats established the value of conditioned training in promoting a greater brain weight in the trained rats as opposed to untrained rats; in addition, greater brain weights were evident in normally fed and overfed rats in comparison with undernourished young rats. Examinations of the brain of 3 year old Wistar rats (equivalent to human age of 90 years) revealed no significant age-related differences except for the slightly reduced size of cerebral hemispheres vis-a-vis 7 and 13 month old rats. However, physiologic experiments demonstrated that best retention of learned response and longest memory were shown by the 3 year old rats.  
References 24: 12 Russian, 12 Western.

USSR

UDC 616-092:612.013.1

#### DISINHIBITION (DEREPRESSION) AND DISINTEGRATION OF PHYSIOLOGIC SYSTEMS IN PATHOLOGY

Moscow ARKHIV PATOLOGII in Russian No 1, 1978 pp 3-13 manuscript received 7 Feb 77

KRYZHANOVSKIY, G. N., Institute of General Pathology and Pathophysiology, Academy of Medical Sciences USSR, Moscow

[Abstract] Philosophical consideration is given to two general principles of general application in biology as factors leading to pathologic states, i.e., disinhibition (derepression in the sense usually reserved for

genetics) and disintegration (dysfunction) of physiologic systems. Both principles are obviously interrelated and one leads to the other following the appropriate stimulus--a lesion profound enough to cause clinical disease. The mechanism underlying disinhibition consists of failure of the various biological control systems. Of particular significance are consequences manifested as hyperactivity of some functional units leading to such states as neoplasia, hyperthyroidism, etc., as well as derepression of the genetic apparatus. References 78: 61 Russian, 17 Western.

USSR

UDC 617.55-091.5

NEW ABDOMINAL WALL INCISION IN AUTOPSY

Moscow ARKHIV PATOLOGII in Russian No 1, 1978 pp 78-79

SAMSONOV, V. A., Department of Pathologic Anatomy and Forensic Medicine, Petrozavodsk University imeni O. V. Kuusinen

[Abstract] Description is provided of an incision employed in over 50 autopsies which permits easy examination of pelvis minor. The incision is commenced from the xiphoid process to the left iliac region as a straight line--or with deviation to the left hypogastric region and subsequently to the iliac region--to Poupart's ligament, and then is continued as a transverse incision to the right in the suprapubic region 4-6 cm above the symphysis pubis in adults for 15-20 cm. Figures 1; references 8: 4 Russian, 1 Romanian, 1 Polish, 2 Western.

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Plant Biochemistry

USSR

UDC 03.00.05

SPECIES OF SEPTORIA FRIES ON CULTIVATED AND WILD CEREALS IN TADZHIKISTAN

Dushanbe IZVESTIYA AKADEMII TADZHIKSKOY SSR. OTDELENIYE BIOLOGICHESKIKH NAUK in Russian No 3, 1977 pp 29-33 manuscript received 10 Dec 76

POGREBNOVA, L. YE., Order of Labor's Red Banner Institute of Botany, Academy of Sciences Tadzhik SSR

[Abstract] Septoria is a fungus parasitizing on cultivated and wild cereals. Eighteen species of the fungus are enumerated, along with their phytocenological origin. 1. *Septoria agrestis* Sacc. is found on the leaves of *Elytrigia repens* (L.) Desv. 2. *S. bromi* Sacc.--on the leaves of various bromes (*Anisantha tectorum* (L.) Nevski, *Bromus Danthoniae* Trin., *B. macrostachys* Desf., *B. oxyodon* Schrenk and *B. scoparius* L.) and *Boissiera squarrosa* (Soland.) Nevski. 3. *S. bromigena* Sacc.--on the leaves of the perennial brome (*Zerna turkestanica* (Drob.) Nevski. 4. *S. calamagrostidis* (Lib.) Sacc.--on the leaves of *Calamagrostis pseudophragmites* (Hall. f.) Koeller. 5. *S. chumsanica* Kalymb.--on the leaves of *Elytrigia trichophora* (Link.) Nevski. 6. *S. culmifida* Lind.--on the leaves of true timothy (*Phleum phleoides* (L.) Simk.) and paniced timothy (*Ph. paniculatum* Huds.). 7. *S. donacis* Pass.--on the leaves of awnless brome (*Zerna inermis* (Leyss) Lind.). 8. *S. gracilis* Pass.--on leaves of *Elytrigia intermedia* (Host.) Nevski and *Elytrigia trichophora* (Link.) Nevski. 9. *S. gramimum* Desm.--on leaves of *Elytrigia trichophora*, bulbous barley (*Hordeum bulbosum* L.) and wild barley (*H. spontaneum* C. Koch.). 10. *S. hordei* Jacz.--on leaves of *Taeniatherum asperum* Nevsk.). 11. *S. lolii* (Cast.) Sacc.--on the leaves of perennial rye grass (*Lolium perenne* L.) and *L. persicum* Boiss. et Hoh.). 12. *S. macropoda* Pass.--on the leaves of spikelet glumes of *Sclerochloa dura* (L.) P. B. 13. *S. nordorum* (Berk.)--on the leaves of the wheat (*Triticum aestivum* L.). 14. *S. oxyspora* Penz. et Sacc.--on the leaves of orchard-grass (*Dactylis glomerata* L.), *Elymus alaicus* Korsh., *Erianthus Ravennae* (L.) Beauv., bulbiferous meadow grass (*Poa bulbosa* L.) and *Piptatherum sogdianum* (Grig.) (Roshev.). 15. *S. phleina* Baudys et Picb.--on the leaves of *Lophochloa phleoides* (Vill.) Reichb.) and *Phleum phleoides* (L.) Simk.). 16. *S. poae-annuae* Sacc.--on the leaves of bulbiferous meadow grass (*Poa bulbosa* L.) and *Poa bactriana* Roshev.). 17. *S. tritici* Rob. et Desm.--on the leaves of soft wheat. 18. *S. triticina* Lobik.--on the leaves of *Aegilops crassa* Boiss.), *A. cylindrica* Host. and *A. triuncialis* L.). References 21, Russian.

USSR

UDC 633.51:581.2(575.3)

WAYS OF ENHANCING COTTON DISEASE RESISTANCE. COTTON WILT PROBLEM. REPORT  
I. TREND AND METHODOLOGY OF STUDIES ON WILT RESISTANCE

Dushanbe IZVESTIYA AKADEMII TADZHIKSKOY SSR. OTDELENIYE BIOLOGICHESKIKH  
NAUK in Russian No 3, 1977 pp 10-16 manuscript received 1 Mar 77

KAS'YANENKO, A. G., Department of General Genetics of Cotton, Academy of  
Sciences Tadzhik SSR

[Abstract] When first introduced, wilt-resistant cotton varieties S-460, 108-F, 159-F, Tashkent-1,2,3, S-2602, 172-F, Ekspress and others resisted disease attacks and substantially lowered wilt losses. Wilt-resistance genes were derived from the wild Mexican variety *Gossypium hirsutum* ssp. *mexicanum* var. *nervosum*. Mutations in the wilt causative agents were found to outpace the induction of wilt-resistance qualities from cross-breeding of cotton varieties. Alternative plant protection measures evaluated and found unsatisfactory included a complex of agrotechnical measures for optimal growing conditions; biological control methods using organisms antagonistic to the wilt causative agent; and chemical protection. Rather, disease resistance must be combined with other enhanced characteristics to combat the mutating wilt causative agent: cotton varieties maturing in 85-90 days will free arable land for cereal and legume crops. Additionally, cotton monocultural practices in Central Asia can be varied by cultivating three to four kinds of plants with different genetic makeup in the same area each year, over a three-year cycle for a total of nine to ten plant genotypes inhabiting the same planted area. Crop rotation will cut down on the use of fungicides by rendering the ecological niche of the mutating wilt causative agent less hospitable. References 15: 14 Russian, 1 Western.

USSR

UDC 613.2:632.35

ESTIMATING THE EFFECTIVENESS OF THE HERBICIDES TREFLAN AND BANVEL-D IN  
CONTROLLING WEEDS AND THEIR EFFECT ON THE BIOLOGICAL VALUE OF BOGARNAYA  
WHEAT IN TADZHIK SSR

Dushanbe IZVESTIYA AKADEMII TADZHIKSKOY SSR. OTDELENIYE BIOLOGICHESKIKH  
NAUK in Russian No 3, 1977 pp 77-82 manuscript received 15 Jul 76

BARATOV, K. B., LITVINOV, V. N., RAZAKOV, K., KASYMOV, KH. A. and BABAYEV,  
I. I., Tadzhik SCientific Research Institute of Epidemiology and Hygiene;  
Scientific Research Institute of Agriculture of the Tadzhik SSR

[Abstract] Teflan is a soil herbicide; it is a orange-yellow crystalline solid with melting point 48.5-49°C, poorly soluble in water and ethanol and readily soluble in acetone and xylol. Banvel-D is a golden-brown crystalline powder with melting point 112-114°C. Applied Russian sweet-sultane in doses of 4.0, 5.0 and 6.0 kg/hectare, teflan was found

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ineffective in a test on bogarnyy wheat fields in the Tadzhik SSR in the wheat shooting stage. The biological value of the wheat grain showed no loss at treflan doses of 4.0, 5.0 and 6.0 kg/hectare. No treflan residue was found in the grain. Banvel-D applied in a dose range of 0.8-1.0 kg/- hectare reduced weed infestation 85-97 percent; wheat yield rose 5-6 quintals/hectare. Applied at 1.5-2.0 and 3.0 kg/hectare doses, banvel-D is toxic to weeds and to the wheat crop yield: it was reduced by 2-3 quintals/hectare. Banvel-D was found superior in herbicidal activity to treflan, because it required a smaller dose to kill weeds, while not affecting the biological value of the wheat at the same time. Banvel-D residue in the grain was 0.02-0.1 mg/kg. References 11, Russian.

Public Health

USSR

UDC 614.882:656.7(47+57)(091)

MAIN STAGES IN THE DEVELOPMENT OF THE MEDICAL AVIATION SERVICE

Moscow ZDRAVOOKHRANENIYE ROSSISKOY FEDERATSII in Russian No 3, 1978  
pp 8-11 manuscript received 1 Jul 77

SHEMBURSKAYA, Z. I., Moscow

[Abstract] August 1977 marks the 50th anniversary of first use of aircraft for medical purposes in the USSR. Medical aviation (sanitarnaya aviatsiya) is important in the Far North and other remote sparsely populated regions. The RSFSR now has 70 detachments and 45 branches, annually conducting 100,000 sanitation and medical operations. During 1976, 600,000 patients were treated, about 700,000 consultations were made, and about 55,000 patients were transported to hospitals. The history of the service, various organizational changes, and equipment and achievements are briefly outlined. It carries out sanitation and anti-epidemic work, and gives consultant assistance to physicians in remote regions. In 1963, the medical aviation stations became subordinate to oblast hospitals. They do not have their own aircraft but use those allocated by the Ministry of Civil Aviation USSR on an annual contract basis. The main aircraft are AN-2 airplanes and MI-1, MI-2, MI-3 helicopters. The production of a medical version of the KA-26 helicopter has begun. In recent years the system has been increasingly used to transport highly specialized medical personnel to remote regions.

USSR

UDC 378.661(049.3)

ACUTE PROBLEMS IN HIGHER MEDICAL EDUCATION

Moscow ZDRAVOOKHRANENIYE ROSSISKOY FEDERATSII in Russian No 3, 1978 pp 8-11

LOPUKHIN, YU. M., professor, academician, Academy of Medical Sciences USSR

[Abstract] With the intention of opening discussion on the above problem, several ideas on improving the work of medical VUZES are presented. (In a footnote the editors state that they share the author's opinions on the importance of these problems and encourage readers to participate in discussions). Medical institutes have recently been given additional obligations which duplicate the functions of health organizations. The institutes have not been given additional resources and personnel. This distracts professors and teachers from their primary jobs. Institutes need precise social directives in the training of physicians in various specialties. There is now little coordination between health needs and types of specialists trained. Physicians must be trained for work at outpatient clinics and urban and rural medical stations. The present system of internship isolates the students from their future posts. Nobody is

seriously involved with interns. Internship also promotes narrow specialization at too early a time in the physicians career. The advisability of this is very disputable. Such specialization should only begin after a two year work term. Specialties should be acquired at institutes for the advanced training of physicians. A special board for the planning and organization of specialization and advanced training of physicians should be set up in the Ministry of Health USSR. Several specific recommendations are made. Highly specialized clinical departments should not be introduced. There are not enough general departments; departments of genetics, immunology and human ecology should be set up and corresponding changes in educational programs should be made. These should include basic education in immunology, genetics and ecology. The three medical institutes in Moscow should be consolidated into one large medical university to permit reorganization of programs. A central scientific research laboratory should be set up for all medical higher educational institutions (where 60% of all medical scientists work). Its basic task would be to create conditions necessary for clinical and theoretical departments to carry on modern research. The organization of scientific research is the weakest link. There should be specific goals for scientific research. The best way to do this is to develop an All-Union program for such research. The alternative is to dissipate resources and to have programs which are not adapted to local conditions. The Academy of Medical Sciences USSR should play a leading role in this new approach. Such changes will require extended time.

USSR

UDC 614.27(091)(476.5)

#### FORMATION AND DEVELOPMENT OF PHARMACY IN VITEBSKAYA OBLAST

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 3, Mar 78 pp 42-44

BELOV, S. I. and BELODED, Z. I., Department of Social Hygiene and Health Organization, Vitebsk Medical Institute

[Abstract] After the October Revolution, a pharmacy department was set up in the region to administer the nationalized pharmacies. There were many difficulties during the Civil War. Raw materials for medicines were purchased from the local population. In 1921 a six month class and later a nine month class for pharmacy workers was created. By 1940 there were 72 pharmacies in the oblast and 47 pharmacy points. During the war many pharmacists served in Partisan detachments. By the end of 1960 there were 122 pharmacies, 456 pharmacy points, and 43 kiosks and stands for selling machines. During the Ninth Five-Year-Plan eight new pharmacies were opened, and by the end of 1975, 30% of the pharmacies were in the second and third categories. By the same time each pharmacy was serving between 4,000 and 8,000 inhabitants. The past 15 years has seen a doubling in the amount of medicines produced. Several workers have been given awards for their services. The Tenth Five-Year-Plan provides for further development of pharmacy services. References 4, Russian.

USSR

UDC 614.2(476.4)

THERAPEUTIC AND SANITARY-EPIDEMIOLOGICAL AID TO THE POPULATION OF  
MOGILEVSKAYA OBLAST

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 3, Mar 78 pp 40-42  
manuscript received 3 Aug 77

LYAKH, V. YE., Chief of the Health Department, Mogilevskaya Oblast  
Executive Committee

[Abstract] In 1909 there were only 6 physicians per 100,000 inhabitants and only 1 for 30,000-40,000 rural inhabitants. Each pharmacy served 25,000-40,000 inhabitants in the Mogilev Guberniya. In 1913 the mortality rate was 18.6 and the infant mortality rate was 200-260 per 1,000. During the war against fascist Germany over 80% of the medical institutions were destroyed. By 1948 they had been rebuilt. In comparison to 1940, by 1965 the number of hospital beds had increased by 140%, the number of physicians had quadrupled, and the number of secondary medical workers had increased 150%. Since 1969, an oblast hospital with 945 beds and an outpatient clinic with a total capacity of 750 visits daily, 3 rayon hospitals, a 200-bed hospital for disabled veterans, and a childrens' hospital with an outpatient clinic for 300 visits daily, another outpatient and sanitaria, have been built. During the Ninth Five Year-Plan, about 10 million rubles from sources other than those of local soviets, industrial enterprises and farms were spent. The number of beds per 10,000 inhabitants increased from 85 in 1968 to 119.8 in 1977. The Khimvolokno sanitation and medical unit has 8 departments. In 1972 a city cardiology center was set up in Mogilev', in 1974 the psychiatric service was reorganized in order to improve services. In the same year, a central clinical biochemical laboratory was built. Attention is being given to rehabilitation work. The sanitary and epidemiological service has 23 sanitation physicians, 38 epidemiologists, and 582 secondary medical workers. The oblast health service is working with several scientific institutes in the republic and has signed contracts for scientific cooperation with institutes engaged in research on sanitation. There are now 2,672 physicians (21.3 per 10,000) and 9,735 secondary medicals (78.1 per 10,000). No references.

USSR

UDC 342(47+57):614.2

HEALTH PROTECTION IN THE USSR--A CONSTITUTIONAL RIGHT

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 12, 1977 pp 3-5

[Abstract] The new Soviet constitution reflects the concern of the CPSU and of the Soviet government for the health of the Soviet people, since the protection of public health is covered in over 20 articles of the constitution with particular attention accorded to maternal and infant

health and well-being. An important aspect of the concern is reflected in the guarantee of free health services. By contrast, the constitution of a capitalist country such as the USA not only makes no mention of health and/or medical services but, as admitted by the president of the US R. Nixon, available health services are denied many citizens in the US because of cost.

USSR

UDC 362.147(47+57)

PREVENTIVE DISPENSARY MONITORING--A MAJOR APPROACH IN SOVIET PUBLIC HEALTH

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 12, 1977 pp 5-9  
manuscript received 27 Apr 77

FREYDLIN, S. YA., Leningrad

[Abstract] A historical outline is proved of the development of public health services in the USSR, beginning with pre-revolutionary Russia. The major emphasis in Soviet health services was, is, and will remain to be, prevention. An important aspect of this approach is routine screening and treatment on an out-patient basis at a preventive dispensary insofar as possible. At the present time, 70% of the individuals undergoing treatment at dispensaries are patients, while the remaining 30% consist of healthy subjects undergoing regular check-ups. The major medical figure in this approach to health care is represented by the district therapeutic physician (vrach-terapevt), who sees 50% of all dispensary patients, and organizes and coordinates the activities of the various medical specialists in the district.

USSR

UDC 636.6+616-057-084

CURRENT OBJECTIVES IN INDUSTRIAL HYGIENE AND PREVENTION OF OCCUPATIONAL DISEASES

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 12, 1977 pp 10-16  
manuscript received 13 May 77

IZMEROV, N. F. and KASPAROV, A. A.

[Abstract] A brief survey is presented of the current objectives of Soviet public health services in the fields of industrial hygiene and occupational diseases, which is but a reflection of the concern expressed by the CPSU and of the Soviet government for the welfare of Soviet workers. The essential point may be made that the chief concern is to further improve

on the excellent medical services already available in the USSR in the field of industrial medicine and to set new and more rigorous standards for the control of noxious agents at the work place. Particular attention will be given during the 10th and subsequent Five-Year-Plans to the development and expansion of industrial medical services in Siberia and the Far East in recognition of their industrial development.

USSR

UDC 61.001.8(049.3)

#### IMPLEMENTATION OF SCIENTIFIC ADVANCEMENTS IN PUBLIC HEALTH

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 12, 1977 pp 32-36  
manuscript received 4 Apr 77

LUBEGINA, Z. P., professor, and candidates of medical sciences, SHAPIRO, E. I. and MINDLIN, G. YA., Sverdlovsk Scientific Research Institute of Traumatology and Orthopedics

[Abstract] An outline is provided of the approach employed at the Sverdlovsk Scientific Research Institute of Traumatology and Orthopedics in implementing new scientific advancements in the practice of public health. In essence, a 3 stage approach is employed. During the first stage, new devices and apparatus undergo extensive testing in the clinics and laboratories of the institute and the appropriate modifications and improvements are made. During the second stage such new devices are introduced into routine practice at the institute and steps are taken for their dissemination to other regional hospitals and traumatologic and orthopedic establishments. In the final stage the new devices are recommended for use at the republic level and, eventually, in certain cases they find application at the All-Union level.

USSR

UDC 615.834(571.1)

#### UTILIZATION OF THE PHYSICAL ATTRIBUTES OF WESTERN SIBERIA IN COMBINED THERAPY

Moscow SOVETSKOYE ZDRAVOOKHRANENIYE in Russian No 12, 1977 pp 36-41  
manuscript received 19 Jun 77

MOISEYENKO, A. A., Department of Social Hygiene and Organization of Public Health, Tyumen Medical Institute

[Abstract] The increase in the population of Western Siberia, particularly in Tyumen oblast, because of the development of the petroleum industry, has

placed new demands on medical services in the region. The recognition of this fact by the Soviet authorities is indicated by the increase in the health budget to 38.5 million rubles in 1976 for this region, which represents a 5.5-fold increase over 1960, and a corresponding increase in the number of hospital beds to 6.5 thousand from 1.5 thousand in the same period of time. However, one of the most promising medical fields--as yet not fully utilized--will involve the development of health resorts and balneotherapeutic centers utilizing the various mineral springs and lakes in this region, as well as curative sapropel mud baths present in great abundance in this part of the USSR. References 13, Russian.

USSR

UDC 614.777

METHODOLOGICAL IMPROVEMENTS IN THE EVALUATION OF THE EFFECTS OF WATER FACTORS ON PUBLIC HEALTH

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 3-8 manuscript received 10 Jun 77

SERGEYEV, YE. P., professor, Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

[Abstract] The problem of surveying the effects of various water-related factors on the state of health of the populace are covered largely with regard to chemical agents, since water-borne infectious diseases have been well studied and well-grounded methods are available for the diagnosis and control of the latter. An all-encompassing approach is suggested for the detection of chemically induced pathologies, which places emphasis on examination of populations in regions with known deviations in the chemical nature of the local water supply, as well as animal experimentation to obtain further information on alterations in physiological parameters that may be chemically induced. The data obtained in this manner would be used in screening studies to determine any abnormalities for which the local water supply could be responsible. References 4, Russian.

USSR

UDC 612.014.49-053.6(571.51-17)

COMPARATIVE EVALUATION OF THE STATE OF HEALTH, NUTRITION, AND METABOLISM  
OF STUDENTS AND PUPILS IN THE FAR NORTH

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 44-49 manuscript  
received 2 Sep 77

KRASNOPEVTSEV, V. M., TIMONOV, M. A., YUSHKO, YA. K., PETROVA, G. A.,  
ZHEREBKOVA, T. N., KHRISTENKO, P. P. and OSKOLKOVA, G. V., Moscow  
Scientific Research Institute of Hygiene imeni F. F. Erisman, and the  
Municipal Sanitary and Epidemiologic Station, Norilsk

[Abstract] During the period 1965-1976 1537 pupils and students (7-18  
years old) in Norilsk and Surgut were subject to evaluation of their  
general state of health, development, nutrition, and metabolism. Nutrition  
was shown to be an important factor in determining the health and physical  
development of children and adolescents as indicated by the Norilsk findings,  
where dietary improvements and fluoridation led to a 24.2% decrease in upper  
respiratory tract infections from 1967 to 1975, as well as 38.7% decrease in  
residual manifestations of rickets, a 25% decrease in neurotic responses,  
58.7% decrease in nontubercular lung diseases, 14.3% decrease in the  
incidence of rheumatism, 50.8% decrease in the incidence of caries of  
permanent teeth and a 40.3% decrease in caries of milk teeth, etc. Certain  
nutritional shortcomings consisted of too many carbohydrates in the diets  
of all age groups, shortage of proteins, fats, and of some vitamins (A,  
B, PP) and minerals (Ca, P). In addition to providing children and  
adolescents in the Far North with appropriate diets, particular attention  
should be accorded to ensure that proper quantities of vitamins C and B<sub>1</sub>  
are included in relation to age. Tables 1; references 5: 4 Russian,  
1 Western.

USSR

UNDER THE INSPIRATION OF THE NEW CONSTITUTION OF THE USSR

Leningrad ARKHIV ANATOMII, GISTOLOGII I EMBRIOLOGII in Russian No 1, 1978  
pp 5-7

[Abstract] The meaning of the new constitution of the USSR for the  
further advancement of the Soviet people, including the strengthening  
and support of science, is briefly recounted against a background of  
Soviet achievements in medicine, sports, conquest of space, etc. All  
of these factors indicate that the predictions of Lenin are coming true,  
as emphasized by L. I. Brezhnev at the Extraordinary Seventh Session of  
the Supreme Soviet on 4 October 1977.

USSR

UDC 576.8.097.22.095.14

EFFECT OF "PASTEURIZING" DOSES OF IONIZING RADIATIONS ON MEDICINAL SENSITIVITY OF MICROORGANISMS, ISOLATED IN A CHEMICAL-PHARMACEUTICAL PLANT

Moscow ANTIBIOTIKI in Russian No 3, 1978 submitted 5 Jul 77, signed to press 15 Feb 78 pp 227-231 manuscript received 29 Jul 77

PAVLOV, YE. P., SHCHEGLOVA, S. G. and SEDOV, V. V., Institute of Biophysics, Ministry of Health USSR, Moscow

[Abstract] A single 250 kilorad dose of irradiation of dry cultures of microorganisms was accompanied by changes in the antibioticogram of 0.5 percent of the 686 strains of microorganisms studied. All microorganisms with changed antibioticograms manifested sensitivity to one, or more frequently, to several of the antibiotics studied. This indicator increased to 9 percent after triple irradiation. No cases of medicinal sensitivity were noted after single or triple irradiation. *Staphylococcus*, *streptococcus*, gram-positive spore forming bacteria, gram-negative bacteria and yeast-like fungi were studied for sensitivity to penicillin, streptomycin, erythromycin, chloramphenical, tetracyclin, neomycin, monomycin, mistatin and levoran. References 4: 2 Russian, 2 Western.

USSR

UDC 614.72-074:[551.577.13:543.47

DETERMINATION OF TRACE ELEMENTS IN RAINFALL BY MEANS OF AN AMALGAM POLAROGRAPHIC METHOD

Moscow GIGIYENA I SANITARIYA in Russian No 3, 1978 pp 66-68 manuscript received 7 Jun 77

KAPLIN, A. A., POKROVSKAYA, A. N. and VOROB'YEVA, A. I., Tomsk Medical Institute, and the Tomsk Polytechnic Institute

[Abstract] An LP-7 (Czechoslovakia) polarograph was employed to test the feasibility of determining the trace element content of 10 ml rainfall samples. The amalgam polarographic method which is described yielded the following average values for Tomsk rainfall during the 1975 spring/summer season: 0.0235 mg/L Cu, 0.0269 mg/L Pb, 0.0060 mg/L Cd, 0.0750 mg/L Zn, and 0.0360 mg/L Mn with absolute errors of 0.00340 to 0.01640 mg/L and 0.38 to 0.55 coefficients of variation. References 2, Russian.

USSR

SERUM LEVELS OF C-REACTIVE PROTEIN AS AN INDICATION OF THE SEVERITY OF RADIATION SICKNESS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 239, No 3, 1978 pp 750-752  
manuscript received 19 Dec 77

MAL'TSEV, V. N., STREL'NIKOV, V. A. and IVANOV, A. A., Institute of Biophysics, Moscow

[Abstract] C-reactive protein (CRP) levels were determined in the sera of rhesus monkeys in various stages of radiation sickness following exposure to gamma radiation from a Co-60 source (100-1200 r at 190 r/min). The results showed a direct correlation between the dose of irradiation, i.e., severity of radiation sickness, and CRP levels, and a formula describing a concave exponential curve was devised for correlating the dose-effect relationship. In general, CRP became elevated 8 hr after exposure and reached maximum values 3 days after irradiation; elevation was again seen on days 15-20 prior to death of monkeys subjected to intermediate doses. However, animals exposed to lethal doses (900 and 1200 r) evidenced a plateau of elevated CRP during the 7-10 day period of survival.  
References 6: 5 Russian, 1 Western.

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## Therapy

USSR

UDC 616.935-036.12-085

### EFFICIENCY OF AGENTS OF THE 8-HYDROXYQUINOLINE GROUP IN THE TREATMENT OF PATIENTS WITH ACUTE DYSENTERY

Kiev VRACHEBNOYE DELO in Russian No 3, 1978 pp 143-147

GEBESH, V. V., SOFIYENKO. N. YA., YANUSHEVSKAYA, R. I., and LYSAK, V. I., Division of Intestinal Infections, Kiev Scientific Research Institute of Infectious Diseases, Ministry of Health Ukr SSR

[Abstract] Some types of drugs used to treat dysentery lead to dysbacteriosis and to intestinal absorption. Some strains of *Shigella* have become resistant to chloromycetin, and tetracycline. Neuritis has been noted as a side effect of medicines containing 8-hydroxyquinoline. The results of treating 180 individuals suffering from acute Flexner Sonne dysentery with intestopane were compared with the treatment of 276 patients with enteroseptol, and 642 with furazolidon. A high percentage of *Shigella* strains were resistant to chloromycetin (32% for Sonne 42.3% for Flexner) and to tetracycline (65.5% for Sonne and 64.8% for Flexner). About 3-4% of the Flexner *Shigella* produce colicine. In recent years there has been an increase in colicinogenic strains. There has also been an increase in strains causing Flexner's, from 14.6% in 1975 to 20.2% in 1976. Few of the patients had acute forms. Treatment with intestopane resulted in normal temperatures for 90% of the patients on the third day, and for the remaining 10% on the fourth to seventh. Figures for furazolidon were 85.5% and 14.5% and for enteroseptol 78% and 22%. Intestinal dysbacteriosis was most frequently noted after furazolidon (69.7%), for intestopane the figure was 63.8% and for enteroseptol 54.0%. Patients given intestopane had the lowest rate of repeat infection (3.3%). It is recommended for widespread use. No side effects were noted. One case study is presented. References 10, Russian.

USSR

UDC 616.697-02:616.65-002.2-07:616.69-008.8.074

### CLINICAL-LABORATORY PARALLELS IN EXCRETORY-TOXIC FORM OF MALE STERILITY

Moscow UROLOGIVA I NEFROLORIYA in Russian No 2, 1978 pp 21-26

YUNDA, I. F., IMSHINETSKAYA, L. P., and SOKOLOVA, M. N., Department of Sexual Pathology and Groups of Endocrinology and Spermatology, Kiev, Scientific Research Institute of Urology

[Abstract] A total of 81 males aged 24-49, 14 healthy, 21 with chronic prostatitis, and 46 with excretory-toxic sterility caused by chronic prostatitis were examined. In the latter group, 67.4% had localized infections, 24% had infected seminal vesicles and 8.6% had infections of the urethra.

45.8% of the ill patients had oligospermia, the spermatozoa exhibited decreased activity and there was a higher frequency of pathological forms. This form of sterility is characterized by hypoandrogenization and relative hyperestrogenuria. The ratio estrone + estradiol was reduced to 1.9  
estriol

while the norm is 3.38. Study of the androgen-estrogen equilibrium showed reduced androgen. Data on androgen metabolism indicates a relationship between pathospermia and changes in the metabolism of male sex hormones. The first stages of treatment should be the elimination of infection. If this does not restore hormone balance, then hormone therapy should follow. References 15: 10 Russian, 5 Western.

USSR

UDC 616.12-008.331.1-039.31-085:615.217.32

#### TREATMENT OF HYPERTENSIVE CRISES WITH METHYLAPOGALANTAMINE

Kiev VRACHEBNOYE DELO in Russian No 3, 1978 pp 32-35

DRONYUK, R. I., VAKALYUK, P. M. and VAL'CHUK, B. I., Department of Hospital Therapy, Ivano-Frankovsk Medical Institute; Therapeutic Division of the Kolomyyskaya Central Rayon Hospital

[Abstract] Existing reports on the treatment of hypertension with methyl-apogalantamine hydrochloride (MH) do not mention effects in hypertension crises. The group studied (32 individuals: 18 women and 14 men aged 35-55) suffered from the II<sup>d</sup> stage of hypertension for 5-15 years. Patients received, iv, 2 to 4 ml of a 0.2% of solution of MH. Following the method of Kh. Kh. Yarullin (1967) the blood circulation of the brain, lungs, and other extremities was used as a measure of the medicine's effect. Prior to treatment arterial pressure was  $195 \pm 12/105 \pm 15$ , while after treatment was reduced by  $30 \pm 10/20 \pm$ . Rheoencephalograph readings also improved, wave amplitude increased to  $0.11 \pm 0.0038$ , the duration of the anacrotic stage was reduced. Treatment with this drug, in combination with dibazol, rauwasan, or hemitone, resulted in stabilized reduced blood pressure after 3-4 days. The use of the drug alone did not result in stabilized improvement. Vascular tension in the brain, lungs and extremities improved significantly. This drug rapidly stops hypertension crises. Its use in combination with other remedies is recommended. References 3, Russian.

USSR

UDC 616.12-008.331-085.835.4:616.12-008.1

EFFECT OF AN OXYGEN COCKTAIL ON THE CARDIOHEMODYNAMICS IN COMPLEX TREATMENT OF PATIENTS WITH HYPERTENSION

Kiev VRACHEBNOYE DELO in Russian No 3, 1978 pp 25-28

ZANOZDRA, N. S., and NAZARENKO, V. R., Department of Hypertension, Ukrainian Scientific Research Institute of Cardiology imeni Academician N. D. Strazhesko, Kiev

[Abstract] Methods for treating hypertension which do not improve the digestion often are not successful. Previous studies have shown that an oxygen cocktail improves hemodynamics and assists other medicines. A group of 39 men and 21 women aged 30 to 60, who suffered from the II<sup>d</sup> stage of hypertension (M3 in the USSR classification) were examined with a mechano-cardiogram to determine changes in hemodynamics and in the left ventricle systole phases after taking rauwasan, isobarin, and hypothiazide (32 patients); a second group (28) were also given oxygen cocktails. In the first group the systole volume increased by 19%, and in the second group 28%. After treatment, the minute blood volume in group 1 increased 8.5% while in the second group it increased 32.3%. The reduction in general peripheral resistance was 13.8% in group 1 and 25.5% in group 2. Recent studies of hypertension indicate that arterial pressure reduction in itself is not an indication of the state of the body. In Group 2 this pressure was lower than group 1 and its further reduction might be harmful. Changes in the left ventricle systole were irreversible in both groups. The use of an oxygen cocktail to supplement treatment of hypertension leads to better hemodynamic characteristics. References 16, Russian.

USSR

UDC 616-001.17-06

COMPLICATIONS IN PATIENTS WITH THERMAL BURNS AS AN INDICATION OF THE EFFICACY OF TREATMENT

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 26-30

POVSTYANOY, N. YE., REDOROVSKIY, A. A., KLIMENKO, L. F., KLENUS, YU. N., KRAVCHENKO, R. I., RYABAYA, R. D., VASIL'CHUK, YU. M. and SHAMENKO, L. P., Burn Therapy Clinic, Republic Burn Center of the Kiev Scientific Research Institute of Hematology and Blood Transfusion

[Abstract] A review is presented of the complications involved in 4794 cases of thermal burns treated at the Ukrainian Republic Burn Center. A total of 631 complications were recorded for 439 patients (9.15%). The mortality rate was 5.86% (281). The records showed that there were 110 cases of septic complications (2.32%), 126 (2.6%) cases of pneumonia,

97 (2.4%) cases of cachexia due to burns, 27 (0.58%) cases with hepatitis, 7 (0.16%) cases with gastrointestinal hemorrhage, 18 (0.37%) cases with renal complications (pyelitis, nephritis, renal stones, etc.), and severe cardiovascular insufficiency was reported in 34 (0.7%) of the patients. The findings indicated that, contrary to some opinions that hold that general mortality is due to inadequate therapy, burns covering more than 50% of body surface in all age groups (30% of body surface in the aged) invariably lead to death as a result of uncompensated skin loss. Mortality in cases with shock and toxemia is largely determined by the extent of trauma, and in cases of septic toxemia on the appropriateness of therapy and complications. References 22: 21 Russian, 1 Western.

USSR

UDC 616-001.17-092:612.12

CONCEPT OF PATHOGENESIS AND THERAPEUTIC PRINCIPLES IN ACUTE TOXEMIA DUE TO BURNS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 30-33

PEKARSKIY, D. YE., professor, Kharkov Scientific Research Institute of General and Emergency Surgery

[Abstract] Based on clinical experience, experimental findings, and information in the literature, a concept is proposed to cover the pathogenesis of acute toxemia in burns and to provide an outline of the corresponding therapeutic measures. In essence, 5 stages in pathogenesis are delineated: 1) Burn wounds--leading to functional imbalances, decompensation of cutaneous cover, and necrosis and paranecrosis which result in system dissemination of active substances from damaged tissues; 2) Toxic substances--released from the necrotic tissue; 3) Intense proteolysis--due to activation of proteolytic enzymes and concomitant depression of inhibitors which is preceded by dissemination of toxic substances ("Toxic Factor"); 4) Depression of nonspecific immunity--correlated with the severity of burns; and 5) Generalized infection--major cause of death. The corresponding therapeutic measures applicable to each stage are, respectively: 1) Preventive surgery; 2) Improvement in microcirculation, cryotherapy, barotherapy; 3) Inhibitors of proteolytic enzymes, correction of protein deficiency; 4) Administration of stimulants, detoxification; and 5) Antibacterial therapy, induction of specific immunity. References 29: 23 Russian, 6 Western.

USSR

UDC 616-001.17

EFFECTS OF HEMODILUTION ON THE HEMODYNAMICS AND TISSUE OXYGEN SUPPLY IN SEVERELY BURNED PATIENTS WITH SEPTICOTOXEMIA

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 33-37

KOZINETS, G. P., Burn Therapy Clinic of the Kiev Scientific Research Institute of Hematology and Blood Transfusion

[Abstract] Studies were conducted on the clinical efficacy of hemodiluent therapy in 40 patients with burns over 5-30% of body surface in improving the hemodynamic state of the patients and, thereby, the level of oxygen supply to the tissues. One hour after the administration of hemodiluents (20 ml/kg of body weight) the hematocrit fell from an average value of 39 to 33.3 ( $P < 0.05$ ), the hemoglobin level from 12.5 gm% to 11 gm%, erythrocyte count from 4,050,000 to 3,579,000 per cu.mm., and blood viscosity decreased from 6 to 4.6 relative units ( $P < 0.05$ ). Circulatory blood volume increased by 27%, plasma volume by 48%, and circulating erythrocytes by 15%. The concomitant increase in minute volume ( $P < 0.05$ ) and decrease in peripheral resistance by 34% led to an increase in muscle  $O_2$  tension by 73% ( $P < 0.001$ ). The results demonstrate that judicious use of hemodiluent therapy leads to hemodynamic improvements in the patients and, consequently, to an increase in tissue oxygen stores. References 17, Russian.

USSR

UDC 616-001.17:615.38

MUTLIPLE TRANSFUSIONS OF THAWED ERYTHROCYTES IN PATIENTS WITH BURNS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1977 pp 38-43

KUL'BAKA, V. S., POLUBOYARINOVA, A. G., KUSHKO, O. V. and BLOTSKAYA, L. L., Candidates of Medical Sciences, Burn Therapy Clinic of the Kiev Scientific Research Institute of Hematology and Blood Transfusions

[Abstract] Erythrocytes frozen within 1-2 days of collection and maintained at  $-196^{\circ}$  for several months to 3.5 years were thawed and transfused into 22 patients (12-65 years old) with burns over 7-30% of body area (6-7 ml/kg body weight, 2-3 times per week, 300-500 ml per transfusion, for a total of 1-5 liters per patient). The results showed that such transfusions did not influence blood levels of haptoglobin, bilirubin, potassium, or A/G ratio. However, free hemoglobin showed an increase which was maintained for at least 7 days. Furthermore, such transfusions were found feasible in patients sensitized to erythrocytes and promoted successful autodermatoplasty. A mild pyrogenic reaction was noted in only 3 patients. References 9: 8 Russian, 1 Western.

USSR

UDC 616-001.17:612.12-07

TABULAR METHOD FOR DIAGNOSIS OF ACUTE TOXEMIA IN PATIENTS WITH BURNS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 47-49

ZAKHARENKO, O. M., Kharkov Scientific Research Institute of General and Emergency Surgery

[Abstract] A test was devised for the construction of a table correlating three parameters reflecting the status of patients with burns--type of necrosis, residual blood nitrogen, and urine toxicity--with the mitotic index of cultured human amnion cells following exposure to the patients serum. According to the table, an index of less than 50 indicates severe toxemia, 50-75 indicates moderate toxemia, 76-90 indicates light toxemia, and 90 indicates absence of toxemia. The error inherent in this method of diagnosis amounts to 18%. References 1, Russian.

USSR

UDC 616-001.17:615.835.3

BAROTHERAPY OF PATIENTS WITH BURNS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 49-51

ANAN'YEVA, T. G., Kharkov Scientific Research Institute of General and Emergency Surgery

[Abstract] Studies were conducted on the effectiveness of hypobaric therapy in 75 patients, 10-60 years of age, with burns covering up to 10% of the surface of their extremities. The therapeutic sessions consisted of 10-20 min exposures/day of the involved area for 5-10 sessions to localized hypobaric pressure (lowered by 20 mm Hg for upper extremities and by 30-40 mm Hg for lower extremities). The results yielded subjective clinical improvement within 3-4 days as well as objective improvements in terms of laboratory data. Patients with deep burns subjected to hypobaric treatment had an average hospital stay of 36 days vs. 78 days for hypobarically untreated control patients, while the mean bed confinement for the two groups was 15 and 27 days, respectively. References 11: 8 Russian, 3 Western.

USSR

UDC 616-001.17-002.44

TREATMENT OF NON-HEALING TROPHIC ULCERS FOLLOWING BURNS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 52-53

SOLOGUB, V. K., GORDEYEV, V. F. and LAGVILAVA, M. G., Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR

[Abstract] Evaluations were made of blood flow in muscles underlying trophic ulcers resulting from burns on extremities in 20 patients, 25-65 years old, using Xe-131 perfusion technique. Control studies conducted on normal individual showed a mean flow of  $6.7 \pm 1.08 \text{ ml} \times \text{min} \times 100 \text{ gm}$ , while in 11 patients with unhealed ulcers of 10-15 years duration a value of  $3.6 \pm 1.07 \text{ ml} \times \text{min} \times 100 \text{ gm}$  was obtained, and in 9 patients with unhealed ulcers of 6 years duration or less a value of  $11.93 \pm 2.37 \text{ ml} \times \text{min} \times 100 \text{ gm}$  was calculated. Treatment of patients with depressed blood flow with proteolytic enzyme therapy resulted in marked abatement of edema within 24 hr at the site of the ulcer, within 48 hr debridement was evident, and granulation occurred in 5-6 days. Additional treatment consisted of ultrasound; the final increase in the rate of blood flow reached 20.5%. Patients with an elevated rate of blood flow were treated for alleviation of the inflammatory process and with antibacterial preparations, debridement, etc. Subsequent autodermatoplasties resulted in complete healing in all 20 patients.

USSR

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CRYOTHERAPY OF THERMAL CUTANEOUS LESIONS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 68-70

SANDOMIRSKIY, B. P., candidate of medical sciences and ISAYEV, YU. I., Institute of Cryobiology and Cryomedical Problems, Academy of Sciences Ukrainian SSR

[Abstract] A literature survey which encompasses both Soviet and non-Soviet reports is presented of current attempts at cryotherapy of burns. The author concludes on the note that as yet optimum temperature and temporal parameters for this type of therapy have not been established, and that the available instruments and apparatus that are available are wanting. References 90: 47 Russian, 43 Western.

USSR

UDC 616-001.17

BURNS DUE TO BITUMEN TARS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 77-78

GUBKIN, N. V., Medical Sanitation Branch, Syzranskiy Petroleum Refinery, Kuybyshev Oblast, and the Department of General Surgery, Arkhangelsk Medical Institute

[Abstract] A brief report is presented of 62 workers who sustained burns with bitumen tars (200-300°) at the Syzranskiy Refinery during the 1971-1976 period. Burns of the upper extremities accounted for 50% of the cases, 40% involved head and neck, and 10% lower extremities. Patients with second degree burns were hospitalized for an average of 21 days, and those with 3d degree burns for 28-30 days. One of the most important aspects of therapy consisted of the removal of the bitumen tars adhering to the lesions to promote more rapid healing and to lessen subsequent discoloration.

USSR

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CANOPY FOR OPEN TREATMENT OF PATIENTS WITH BURNS

Kiev KLINICHESKAYA KHIRURGIYA in Russian No 3, 1978 pp 79-80

BIGUNYAK, V. V., PRIDATKEVICH, A. V. and DEMBORINSKIY, I. V., Department of Burns, First Ternopol' Municipal Hospital

[Abstract] A light-weight canopy was designed for placement over the beds of patients with burns in order to ease access to patients subjected to open form of treatment. A qualitative description is provided and the advantages it offers over heavy commercially available frames is discussed. Figures 2.

USSR

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CARDIOLOGY AND CYBERNETICS

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 11, 1977 pp 23-26 manuscript  
received 28 Jan 77

SIDORENKO, G. I., professor, Department of Faculty Therapy, and the Problem  
Laboratory for Cybernetic Methods of Diagnosis and Bioregulation, Minsk  
Medical Institute

[Abstract] A brief survey is provided of the relationship between  
cardiology and the application of cybernetics to the diagnosis and  
prognosis of cardiovascular diseases. Cybernetic approaches have been  
found particularly effective in hypotensive and anticoagulant therapy in  
selecting optimum therapeutic regimens, and computer programs have been  
devised which are invaluable for prognostic purposes, particularly in  
predicting complications and in implementing preventive measures.  
References 21: 20 Russian, 1 Western.

USSR

UDC 616.12-008.331.1-085.835.5

AEROSOL THERAPY WITH GANGLIONIC BLOCKADERS IN HYPERTENSIVE EMERGENCIES

Minsk ZDRAVOOKHRANENIYE BELORUSSII in Russian No 11, 1977 pp 66-70 manuscript  
received 7 Dec 76

GELIS, L. G., Problem Scientific Research Laboratory of Cybernetic Methods  
of Diagnosis and Bioregulation, Minsk Medical Institute

[Abstract] Studies were conducted to test the efficacy of aerosol ganglionic  
blockaders in reducing blood pressure. Experiments conducted with 20 cats  
demonstrated that within 2.5 min of inhalation of trimethaphan camsylate  
(Arfonad) blood pressure fell from 130 mm Hg to 90 mm Hg ( $P < 0.001$ ) and  
hypotension was maintained for 45-55 min. Hypotension in the cats was  
accompanied by a decrease in the amplitude of femoral pulse wave, and an  
increase in the heart rate without any significant changes in the rate of  
respiration. Studies with 137 hypertensive patients showed that adminis-  
tration of Arfonad or Hygronium aerosols yielded an average fall in blood  
pressure from 180/120 mm Hg to 150/100 mm Hg within 5-10 min ( $P < 0.001$ )  
of administration. In some individuals use of the aerosol therapy was  
accompanied by a decrease in the peripheral resistance and an increase in  
the cardiac output, while in others the minute volume decreased and peri-  
pheral resistance increased. Figures 3; references 3, Russian.

BEHAVIORAL SCIENCES  
Physiological Psychology

USSR

UDC 615.214.015.4:612.826

THE MESOLIMBIC SYSTEM AND ITS INVOLVEMENT IN THE ACTION OF PSYCHOTROPIC AGENTS (A LITERATURE REVIEW)

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian No 5, 1977 pp 623-630  
manuscript received 13 Dec 76

ARUSHANYAN, E. G., Department of Pharmacology, Chita Medical Institute

[Abstract] Current theories and experimental evidence regarding the role of the mesolimbic system in psychopathology and in the function of various psychotropic agents are reviewed. The essential thesis proceeds on the assumption that various psychotropic agents--neuroleptics, psychostimulants, psychomimetics--influence the dopaminergic pathway which originates in the midbrain and terminates in the various regions of the mesolimbic system, thereby affecting emotional and behavioral patterns. References 91: 11 Russian, 80 Western.

USSR

UDC 615.281.8.015.4:612.821.3

EFFECTS OF AMANTADINE ON EMOTIONAL REACTIVITY AND AGGRESSIVENESS OF RATS AND MICE

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian No 5, 1977 pp 517-521  
manuscript received 4 Oct 76

ZHARKOVSKIY, A. M., Department of Pharmacology, Tartu University

[Abstract] Intraperitoneal administration of amantadine (30-75 mg/kg) to albino male rats increased the thresholds for electric current induced pain and aggressiveness (apomorphine induced), prolonged retention time on a rotating bar, and diminished somewhat orientative motor activity; emotional responsiveness and aggressiveness were not affected by 3-10 mg/kg of amantadine. Administration of 25-100 mg/kg of amantadine to albino male mice after 4 weeks of isolation also diminished aggressiveness. Bilateral destruction of the caudate nuclei in rats facilitated emotional reactivity and aggressiveness and completely abolished the tranquilizing effects of amantadine, while not affecting the orientative motor response. Destruction of the raphe nuclei in rats increased the thresholds for aggressiveness and emotional reactivity and enhanced orientative motor activity 7-10 days after surgery; in such animals the effects of amantadine were diminished and did not affect orientating motor activity. The data were interpreted to indicate that the effects of amantadine on emotional behavior are due to activation of serotonergic system in the striopallidial complex and, possibly, of the dopaminergic system in the striatum. Figures 2; References 22; 8 Russian, 14 Western.

USSR

UDC 612

## TIME LIMITATIONS OF PROCESSING VISUAL INFORMATION BY A MAN-OPERATOR

Moscow FIZIOLOGIYA CHELOVYEKA in Russian No 2, 1978 pp 238-244 manuscript  
received 29 Jul 76

MESHCHERYAKOV, V. A. and KAZANOVSKAYA, I. A., Institute of Experimental Medicine, Academy of Medical Sciences USSR, Leningrad

[Abstract] Results of studies of time limitations on processing visual information in experiments which model the activity of a man-operator in reception and classification of digital symbols indicated that the increase in the numbers of erroneous reactions of decoding during an increase of information loading may be caused by a psychological refractory period. It indicated the existence of different time limitations for the period of study and the period of firm comprehension of the algorithm of decoding. It was established that, under conditions of increasing information loading, the activity of the examinees, proceeds against a background of pronounced emotional stress and is accompanied by reduction of the indicators of effectiveness. The self-regulation activity of the human brain during increase of volume of information was directed toward elimination of the time deficit spent on processing it. Figures 2; references 21: 14 Russian, 7 Western.

USSR

UDC 612.84

## SOME MECHANISMS OF VISUAL MASKING

Moscow FIZIOLOGIYA CHELOVYEKA in Russian No 2, 1978 pp 262-266 manuscript  
received 12 Jan 77

GANTMAN, A. I. and TANENGOL'TS, Institute of Problems of Control, Moscow

[Abstract] A study of the quantitative dependence of the strength of masking on the form of the mask, and the distance between the mask and the stimulus, produced different dependence curves of the effect of masking on the distance between the stimulus and the mask for spot masks and masks constituted of horizontal lines; hereby the effect of the spot mask diminishes quickly with removal from the region of the stimulus and the mask constituted of horizontal lines remained relatively constant within a certain limit of shift. The results of the experiment indicated that the interaction with the stimulus of spot masks occurs at the periphery of the visual system while, in masks composed of horizontal lines, it occurs within the cortex. Figures 2; references 7: 1 Russian, 6 Western.

USSR

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CORTICAL EVOKED POTENTIALS AFTER SEQUENTIAL VISUAL MASKING

Moscow FIZIOLOGIYA CHELOVYEKA in Russian No 2, 1978 pp 267-274 manuscript  
received 28 Feb 77

SAMOYLOVICH, L. A. and TRUSH, V. D., Moscow State University imeni M. V. Lomonosov; All-Union Scientific Research Institute of Technical Esthetics, Moscow

[Abstract] This study of temporary mechanisms of perception under conditions of sequential visual masking recorded evoked potentials in response to digital stimuli which were presented by an electronic computer on a luminescent indicator. It was found that, after sequential masking of sensory signals, there is observed an inhibition of briefly-latent components of the evoked potential (P<sub>40</sub> and N<sub>70</sub>), which correlates with a V-shape form of the positional curve of correct responses. The study identified the leading role of sensory systems of the brain in the time-space interaction of signals which indicated the connection of effects of masking with mechanisms of the cycle of restoration of cortical excitability. It was noted that weaker inhibition of responses in non-projection regions of the brain indicates the leading role of projection zones of the cortex in mechanisms of temporary interaction of the visual system. Figures 5; references 23: 8 Russian, 15 Western.

USSR

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SOME PECULIARITIES OF CODING INFORMATION AFTER ELECTRICAL STIMULATION OF THE SKIN

Moscow FIZIOLOGIYA CHELOVYEKA in Russian No 2, 1978 31 Jan 76 manuscript  
received 31 Jan 76

YAROSHENKO, A. A. and KONOVALOV, L. M., Siberian Physico-Technical Institute imeni V. D. Kuznetsov at the Tomsk State University imeni V. V. Kuybyshev

[Abstract] Two operators, specially trained in discrimination of frequencies were used to compare continuous and discrete methods of electrocutaneous presentation of information using the example of compensatory tracking during use of a frequency code. The quality of tracking was seen to depend upon changes of the threshold sensitivity in time, caused by adaptational properties of the cutaneous analyzer. The experiments indicated that discrete presentation of signals of 500 and 1500 hertz, with duration of impulse and spacing of no less than 0.6 seconds, did not change the threshold sensitivity. At frequencies of tracking signals higher than 0.06 hertz, the optimum method of information presentation concerning

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tracking error is the method with a 10 percent insensitivity zone since it permits discretization of the coded signal with minimum loss of information from tracking error. Tracking disruption during the optimal method of information presentation occurred at a 0.25 hertz level of the tracked signal. The practical selection of any of the studied methods depended upon the fixed parameters of the tracked signal, the necessity for accuracy and the time of solving the tracking problem. Figures 3; references 15: 11 Russian, 4 Western.

USSR

SOME PECULIARITIES OF BACKGROUND ELECTROENCEPHALOGRAF AS AN INDICATOR OF FUNCTION ASYMMETRY OF THE CEREBRAL HEMISPHERES

Moscow FIZIOLOGIYA CHELOVYEKA in Russian No 2, 1978 pp 310-317 manuscript received 1 Oct 76

SUVOROVA, V. V., Institute of General and Pedagogical Psychology of the Academy of Pedagogical Sciences USSR, Moscow

[Abstract] A study was made of the EEG-indicators of dominance of the left and right hemispheres in adult healthy examinees. Two groups were used (one used the "Sanei" encephalograph and the other used the "Nihon Conden"). The first group produced bipolar temporal-occipital readings from the left and right hemispheres (22 persons) and the 2d group produced monopolar readings from the left temporal and occipital regions of the left and right hemispheres in a soundproof, dark room in a sitting position. Individual peculiarities of functional asymmetry of the hemispheres in background encephalogram was not directly expressed in the distribution of electrical activity according to hemispheres. For predominance of functions of left-hemispheric dominance, a desynchronized curve and focus of electrical activity in occipital regions of the left and right hemispheres throughout the entire range of frequencies were characteristic. Predominance of functions of the right hemispheric dominance was characterized by pronunciation of alpha-rhythm in the summary EEG and by 2 foci of electrical activity: in the temporal region (delta-rhythm and theta rhythm) and in the occipital region (for alpha rhythm, beta-one rhythm and beta-two rhythms). References 33: 29 Russian, 4 Western.

USSR

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DAILY AND SEASONAL CHANGES OF REGULATION OF HEART RHYTHM IN FARM MACHINERY MAINTENANCE ENGINEERS

Moscow FIZIOLOGIYA CHELOVYEKA in Russian No 2, 1978 pp 323-327 manuscript received 29 Mar 76

BOLGUNOVA, M. YA., Kiev Scientific Research Institute of Labor Hygiene and Occupational Diseases

[Abstract] This work was undertaken in the Poles'ya zone (Zhitomir Oblast, Ukr SSR). A study of 27 farm machinery mechanics ranging in age from 25-44 years and working in their specialty from 3-16 years indicated that the workers, at the beginning of work, displayed higher heart rates, and fewer indicators of its variability, in winter than at other times of the year. At the end of the work day the mean square deviation and  $\Delta x$  were more significant, the mean value of the cardiocycle increased as indicated by reduction of heart rate with marked expansion of the base and amplification of the negative symmetry of the interval histogram. Change of regulation of heart rhythm in winter work was attributed to reduction of tonus of the sympathetic section of the autonomic nervous system and an increase of parasympathetic activity. This was indicated also by some reduction of the stress index and the amplitude of the mode at the end of the work day. The same dynamics of change of indicators resulted from physical exercise. Analysis of the heart rate of the same group working in summer and spring indicated an increase of activity of the sympathetic section of the autonomic nervous system in these periods, when the work was most intense. In the pre-work state, the mean value of the cardiocycle and the variability indicators were increased. The changes were attributed to work stress and fatigue and showed the need for preventive measures and a rational work regime according to the season and time of day. References 31, Russian.

USSR

UDC 612.217

PECULIARITIES OF VOLUNTARY CONTROL OF BREATHING IN MAN DURING DIFFERENT RATES OF MUSCULAR ACTIVITY

Moscow FIZIOLOGIYA CHELOVYEKA in Russian No 2, 1978 pp 328-334 manuscript received 15 Dec 76

MINYAYEV, V. I., Kalinin State University, Institute of Physiology imeni I. P. Pavlov of the Academy of Sciences USSR, Leningrad

[Abstract] Time and volumetric parameters of voluntary breathing in 10 healthy men (19-30 years old) were registered on a "Meta 1-25" spirograph as each man underwent 5 breathing cycles with fixed respiratory volume of 1600 ml and experienced 4 degrees (moderate, large, submaximal and maximal)

of muscular activity on bicycle ergometers. The experiments demonstrated that man has the capacity to control breathing during work at any rate if this control is not accompanied by significant disturbance of gas composition and acid-alkaline balance of the internal environment. The effectiveness of control of breathing differed only slightly from control of hand movements. Voluntary control of breathing, at the finish of work at submaximal rates with a high deficit of pulmonary ventilation, produced hypoxemia and hypercapnia. The results confirmed that neuroreflex impulsion is one of the basic components of the mechanism of adaptation of breathing to the metabolic needs of the body during muscle work while not a specific stimulus limiting voluntary control of breathing. The basic obstacle to voluntary breathing is amplified chemoreceptor stimulation occurring when physical exercise is accompanied by serious shifts of the gas composition and acid-base equilibrium of the internal environment signalling dangerous changes of homeostasis. Proprioceptive impulsations amplify the exciting effect of chemoreception at the respiratory center during this and accelerate formation of an imperative stimulus which shifts breathing from cortical control to complete control by humoral-reflex mechanisms. Figures 4; references 10: 7 Russian, 3 Western.

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